

MODERN PHOTOGRAPHY

Vol. 15, No. 10, April 1955, 35 cents

BIGGEST EXPOSURE ISSUE EVER!

**16 PGS: HOW TO USE
AN EXPOSURE METER**

**IS YOUR EXPOSURE
METER ACCURATE?**

**MODERN'S SNAPSHOT
EXPOSURE GUIDE**

**COLOR LANDSCAPE
PROBLEMS SOLVED**

**WHICH EXPOSURE METER
SHOULD YOU BUY?**



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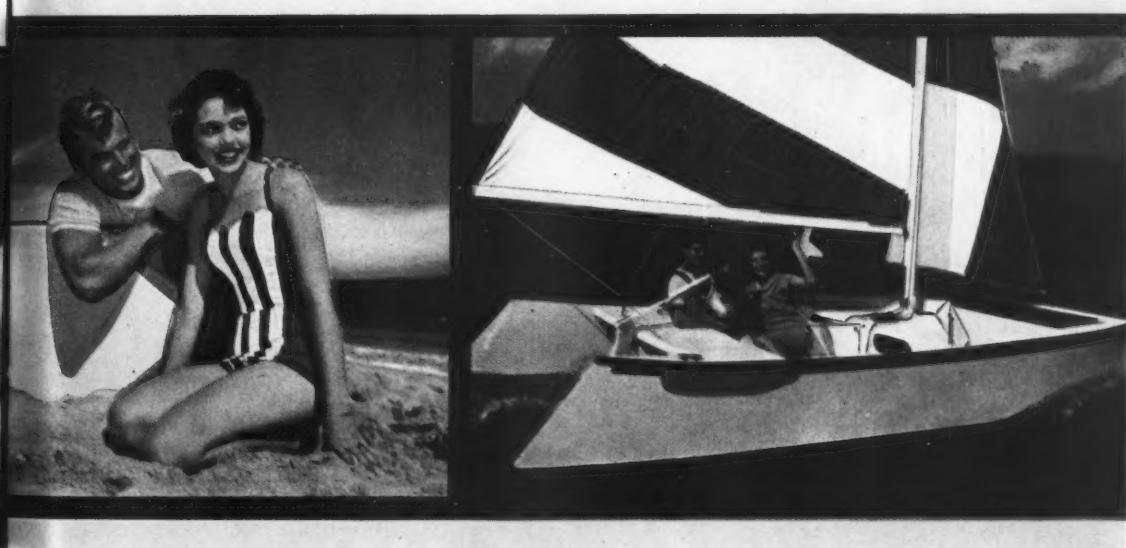


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Important Facts about Exposure Meters

Anyone who takes anything more than "snapshots" knows the value of a good exposure meter. But when the average amateur decides to *buy* a meter, he has from 15 to 20 meters to choose from, all reputedly "good." How does he judge one from another? Which *one* will give him the *best* all-around use?

What Does An Exposure Meter Do?

Every exposure meter does essentially two things: it measures light intensity and provides a means for converting that measurement into a lens opening-shutter speed combination for exposing the film. Although the "conversion" is accomplished in about the same way in almost all meters, there are major differences in the way meters *measure* light. The *quality* of photoelectric element, the *sensitivity* of the microammeter, the *kind* of light measured, and the *way* it is collected and transmitted are all determining factors in the over-all accuracy of the meter, and consequently, the correctness of the exposure.

The Two Kinds of Light

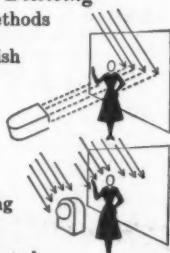
All modern exposure meters measure light by means of a photoelectric element which sends a tiny current to a sensitive microammeter. But there are *two* distinctly different *kinds* of light that can be measured, and meter types are divided in the same way. One is designed to measure the light *reflected* by the subject, the other to measure *incident* light, or light falling on the subject.

Which One to Use?

Which type of light provides the more accurate basis for correct exposure? In the leading studios in Hollywood, millions of feet of film have been perfectly exposed on the basis of incident light exposure determination. In fact, the majority of photographers in the motion picture industry today use the incident light method, particularly because it meets the more critical requirements of color photography. Furthermore, the fact that "incident light attachments" are available for virtually all reflected light meters on the market today indicates recognition of the need for a way to measure incident light. There are a number of good reasons to explain why the measurement of incident light is the preferred method.

Reflected Light Readings Can Be Deceiving

The difference in results between the two methods can be best understood by taking a typical situation as an example. Assume that you wish to photograph a scene which includes a person in dark clothes against a bright background (a light building, a bright sky, etc.). Reading the *reflected* light with a reflected light meter gives an abnormally high reading because of the brilliant background. Hence, underexposure is the result. On the other hand, by measuring the *incident* light with a meter specifically designed for this purpose, exposure is based on the light falling *on* the subject, uncomplicated by the distortion caused by the background in the reflected method. The same principle applies to *any* scene where contrast ranges from brilliant highlight to deep shadow. It is the *incident* light actually falling *on* the subject which most accurately determines proper exposure.



The Right Way Is Also the Easiest

Fairly accurate approximations of incident light can be made with a reflected light meter, by first taking a shadow reading

and then a highlight reading, and averaging them. But besides being tedious, this method has the more serious disadvantage of requiring precise determination of exactly what *are* true shadow and highlight areas, how close to them the reflected light meter should be held, at what angle, etc. Far simpler, and much more accurate, is the use of the Norwood Director exposure meter made by Brockway, which is expressly designed to measure incident light. All the incident light of all intensities, falling on the camera side of the subject, is automatically integrated and the midpoint for proper exposure is instantly indicated.

The Meter the Professionals Designed

The first meter specifically designed to measure incident light, the original Norwood Director, was developed by professional motion picture photographers in Hollywood. The same basic design principles and unique means of light collection and integration used in this meter, plus operating improvements and many other refinements at far lower cost, are today embodied in two models of the Norwood Director produced by Brockway. These BROCKWAY exposure meters are still the *only true* incident light meters available.

The BROCKWAY M-2 Model Norwood Director—an extremely *versatile* incident light meter used by leading Hollywood photographers and thousands of professional and amateur photographers throughout the world. Slides are available for direct readings. The M-2 offers the highest degree of true incident light measuring accuracy for all types of photography—*plus* amazing simplicity.



The BROCKWAY M-3 Model Norwood Director—an extremely compact, direct reading incident light meter designed for those who wish ultimate *simplicity* of operation and with no sacrifice in accuracy. The M-3 gives perfect exposure readings for stills or movies, color, black and white and Polaroid films. Less than two ounces in weight, the M-3 can be clipped on the pocket like a pencil. Accuracy, quality and precision workmanship are comparable to the more expensive M-2.

Both meters are equipped with the patented *Photosphere*, a unique translucent hemisphere that collects and integrates the *same* light that illuminates the subject. Actually, the Photosphere is a miniature representation of the camera side of any three-dimensional subject. It closely approximates the shape of the human face. This is one reason why BROCKWAY exposure meters provide exact exposure readings for color photographs of people. The electrical mechanisms of the M-2 and M-3 are the result of painstaking design and elaborate production and inspection facilities. In every sense, the BROCKWAY M-2 and M-3 are precision instruments *specifically designed* to measure incident light for consistent perfection in all types of photography.



If you would like to know more about the BROCKWAY exposure meters, visit your dealer for a demonstration of the versatile M-2, the "standard of the studios," or the new direct reading M-3. The M-2 is priced at \$32.95, the new M-3, \$16.95. For a descriptive folder, write Brockway Director Corporation, 570 Fifth Ave., New York 36, New York.



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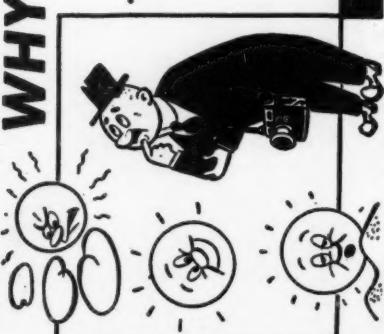
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modern PHOTOGRAPHY

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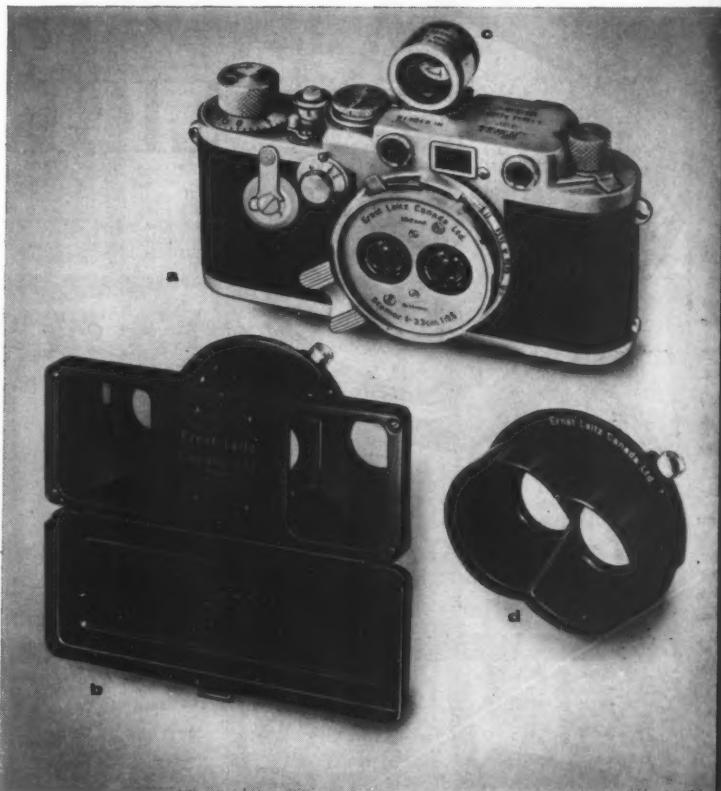
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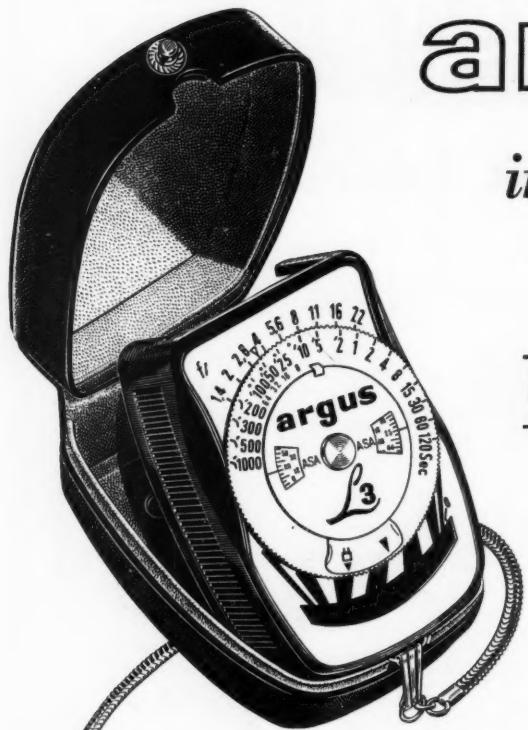
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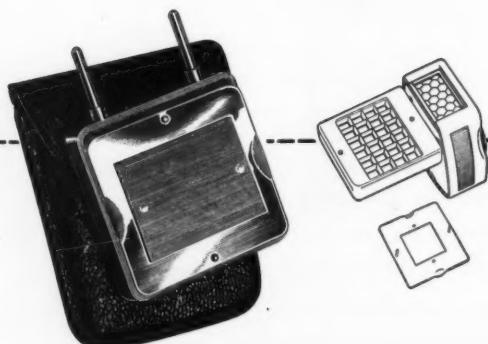
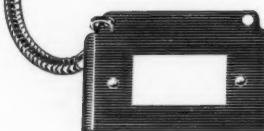
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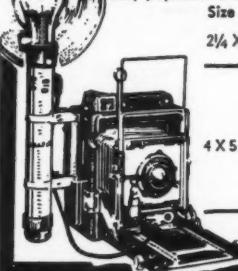
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Size	Coated Lens in Shutter	Speed	Cr. n
2 1/4 X 3 1/4	101mm Ektar f/4.5 (1/800 sec.)	300.	273.
	105mm Tessar f/3.5	323.	279.
	105mm Ektar f/3.7	312.	268.
4 X 5	135mm Schneider Xenar f/4.7	307.	265.
	135mm Optar f/4.7	322.	278.
	127mm Ektar f/4.7	322.	278.
	135mm Tessar f/4.5	337.	297.
	150mm Schneider Xenar f/4.5	347.	304.
	150mm Tessar f/4.5	347.	304.
	152mm Ektar f/4.5	338.	298.
	135mm Schneider Xenar f/3.8	353.	313.
	150mm Tessar f/3.5	408.	364.
	150mm Schneider Xenar f/2.8	517.	477.

New Graphic rangefinder is manufactured for 4 X 5 cameras only. 2 1/4 X 3 1/4 outfits are supplied with Kalart coupled rangefinder.



Automatic Ektalite
WITH FULLY AUTOMATIC
DIAPHRAGM lens listed:
Westar f/2.8 \$249.50
Cash or \$24.95 Down;
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Cash or \$28.75 Down; Bio-
tar f/2.0 \$345 Cash or
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New full synchro models!
IIA with Sonnar coated
f/2.0 lens \$345. Cash or
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nar coated f/1.5 lens
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Life-size rangefinder/
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With Nikkor coated f/2.0
lens \$299.50 Cash or
\$29.95 Down; or with
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Down.

new 1955 CONTAFLEX
Ground-
glass
eye-lev-
elfocus-
ing is
com-
bined
with
split image rangefinder.
Tessar 45mm f/2.8 coated
lens with fully automatic
diaphragm! Contaflex I
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Contaflex II (Built-in Me-
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Down.

1955 Linhof
Super
Technika
Cameras

4 x 5 model with Multi-
focus rangefinder and
127mm Xenar coated f/4.7
lens in M-X shutter \$394.70
Cash or \$39.47 Down. Lin-
hof 2 1/4 x 3 1/4 outfit with
multifocus rangefinder and
3 lenses complete \$564.15
Cash or \$56.41 Down.

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or \$10.95
Down; Auto-
mega B-5
\$134.50 Cash
or \$13.45
Down; latest
Omega D-2
with Omega-
lite \$164.40 Cash or \$16.40
Down; Omega D-2 con-
denser model \$173.50 Cash
or \$17.35 Down; NEW
Automega D-3 \$207.50
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with crisp
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flex 2.8C, either Xenar
f/2.8 lens or Zeiss Planar
f/2.8 lens \$291.50 Cash
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Down; T-500
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or \$17.95
Down; de-
luxe push-
button T-700 \$225. Cash
or \$22.50 Down; TR-800
(like T-700 plus built-in
radio) \$277.50 Cash or
\$27.75 Down. T-100 gives
1 hr. recording time; all
others — 2 hrs.

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just out!
released! Complete with
3 top Kern lenses: Switar
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f/1.8. Switar 50mm f/1.4
plus compartment case
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COFFEE BREAK

with the editors

THIS MONTH'S COVER • • •

We phoned photographer Dan Wynn to ask for the technical data on this month's beautiful profile shot of model Mary Jane Russell. He duly reported "Polaroid Land Camera, Flexichrome Print." Since it was a befuddling spring afternoon, we duly made a record of his comments, hung up the phone. As we did so, the day's date leaped from the calendar and brought us back to reality—April 1st. Next day we elicited the following information: Shot with an 8x10 view camera, 14-inch Ektar lens, stopped down to f/16. Lighting: single 1500-watt electronic flash. Distance: about three feet. Model: lovely.

AN UNHAPPY NOTE • • •

On March 28, Ylla, the world's most famous animal photographer, was killed in India. She was covering a bullock cart race from a jeep which struck a bump, throwing her onto the ground. She died a few hours later.

A charming woman, with a rare zest for living, and a master of her craft, Ylla began her creative life in



Impossible movie shot?

Delicate Arch—all of it—shot from this exact spot.

How'd he do it? As "Guest Editor" of the Dr. Cinema column this month, (page 83) Glen explains how he constantly uses a 35mm camera in connection with his movie-making. The 35mm camera not only produces color slides from angles impossible to duplicate with a movie camera, but also yields slides that can be woven into ultra-smooth fades, dissolves, and transition shots later on. The beauty of it is this: No one has yet detected in a final film which scenes (of motionless objects, of course) were originally filmed in the movie camera—and which were copied from 35mm slides!

COMING NEXT MONTH • • •

• *Picture-Taking Ideas Outdoors!* It's coming on time to get that camera out of the bad weather mothballs and into the sun and happy days of summer picture-taking. Here are more than 50 ideas for improving your summertime photography!

• *Zoom Lenses.* A complete up-to-date report on all the zoom lenses available for the movie maker. How they work, how they will add excitement to your cine photography.

• *Fastest Color Film Yet!* Now you can shoot color at the same (or even faster) speeds which you have been using for black-and-white films. The technical story of the new Anscochrome—shot at what seem to be incredible ratings with beautiful results!

• *The Wide Range of Sanford Roth.* Roth has a dynamic approach to portraits. Odd angles, well-chosen backgrounds, catching subjects in off-guard moments—all these add up to a new approach to handling people. How and why he does it makes a fascinating and highly informative story you won't want to miss!

• *Picture Review of a New Book.* Morris Jaffe (see MODERN, Jan., 1955) has just published a charming book on a little girl's first experiences at school. Here's the story on how he made the pictures, handled his young model.

(Continued on page 20)



Ylla at work.

Paris as a sculptor. She was sidetracked by a camera and went on to become a specialist unmatched in her particular field.

Ylla did much of her work in her own studio apartment and in zoos. Recently, however, she had turned to photographing wild animals in their native habitats.

She published many books, the latest on Africa, and was in the process of preparing one on the animals of India, when she met her final, fatal accident.

TEN FEET FROM ETERNITY • • •

A few feet in back of the spot from which this picture was taken is a sheer drop of hundreds of feet. Glen Turner of Springville, Utah, needed a shot of the arch, but couldn't back up far enough to get all of it in his field of view even with the widest-angle lens in his 16mm movie kit. Yet in Glen's final prize-winning movie, there is *The*

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The Ikoflex I-a permits a choice of the Zeiss Tessar f/3.5 lens or, at lower cost, the Novar f/3.5 lens in Prontor SV shutter with speeds to 1/300 sec.

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	New	Used	Trade-in
28 mm f3.5 Sorenar W.A.	\$134.00	\$ 84.00	\$60.00
35 mm f2.8 Biogon W.A. c.	183.00	126.95	100.00
35 mm f3.5 Elmar W.A. c.	48.00	35.00	
35 mm f3.5 Nikkor W.A. c.	97.50	57.00	40.00
35 mm f3.5 Sorenar W.A. c.	72.00	48.00	35.00
35 mm f2.8 Sorenar W.A. c.	110.00	78.00	50.00
35 mm f3.5 Summaron W.A. c.	96.00	58.00	40.00
50 mm f3.5 Elmar c.	57.00	34.00	30.00
50 mm f1.4 Nikkor c.	199.50	118.00	90.00
50 mm f1.5 Sonnar c.	100.00	62.00	45.00
50 mm f1.5 Summaron c.	88.00	63.75	45.00
50 mm f2 Summicron c.	156.00	106.00	85.00
50 mm f1.5 Summarit c.	177.00	113.25	90.00
85 mm f2 Nikkor c.	179.50	89.00	70.00
85 mm f1.5 Sorenar c.	238.00	137.50	110.00
85 mm f1.5 Angenieux c.	188.00	108.00	85.00
85 mm f1.5 Summarit c.	360.00	179.00	140.00
90mm f4 Elmar c.	90.00	58.00	40.00
100mm f4 Sorenar c.	87.00	49.00	35.00
135mm f4.5 Leitz Hektor Blik c.	68.50	40.00	
135mm f4.5 Nektor c.	135.00	88.50	75.00
135mm f4.5 Angenieux c.	135.00	88.50	75.00
135mm f4 Sorenar c.	108.00	69.00	50.00
135mm f4 Sonnar c.	146.00	88.00	70.00
200mm f4.5 Tele-Telyt c.	156.00	104.00	75.00
400mm f5.6 Novoflex c.	189.50	.....	85.00

Lenses for EXAKTA, CONTAX D, PRAKTICA, PENTACON

	New	Used	Trade-in
28mm f3.5 Angenieux c.	\$120.00	\$ 78.50	\$ 60.00
35mm f2.8 Angenieux c.	99.50	58.00	50.00
40mm f3.5 Cassar c.	49.50	31.00	20.00
50mm f2.8 Westmar Auto Dioptr.	69.50	44.50	30.00
50mm f1.8 Westmar Auto.	169.50	110.00	90.00
50mm f2 Biogon c.	49.00	34.00	30.00
58mm f2 Biogon preset c.	125.00	66.75	45.00
58mm f1.9 Prinoplan c.	44.00	30.00	
75mm f1.5 Biogon c.	216.50	98.50	75.00
85mm f2.8 Steinheil c.	65.00	42.00	30.00
90mm f2.8 Angenieux c.	115.00	75.00	55.00
90mm f1.8 Angenieux c.	149.50	96.50	75.00
93mm f4 Sun c.	51.95	24.50	20.00
90mm f4 Sun preset c.	64.95	33.50	25.00
135mm f3.5 Angenieux c.	75.50	45.00	30.00
135mm f4.5 Steinheil c.	117.00	77.00	55.00
135mm f4.5 Tele-Elmar c.	58.50	29.50	20.00
135mm f3.5 Sun preset c.	74.95	36.50	25.00
135mm f3.5 Tele-Elmar preset c.	94.95	44.00	35.00
135mm f4.5 Tele-Xenar c.	58.50	39.50	30.00
135mm f4 Zeiss Triotar c.	49.00	35.00	
180mm f4.5 Tele-Xenar c.	82.75	54.50	40.00
240mm f5.5 Tele-Xenar c.	115.75	78.00	55.00
360mm f5.5 Schneider Tele-Xenar c.	163.95	98.00	75.00
400mm f5.5 Novoflex c.	189.50	85.00
400mm f5.6 Novoflex c.	199.50	137.50	100.00

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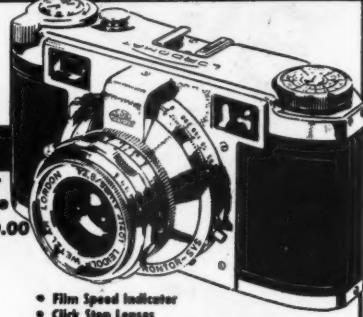
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	New	Used	Trade-in
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Leitz Imaclad Finder	39.00	24.00	16.00
Leitz B. C. Flashgun	24.00	18.00	12.00
Leitz Reflex Housing	102.00	69.00	50.00
Zeiss Revolv. Univ. Finder	80.00	43.00	30.00
Zeiss Revolv. Close-Up	100.00	50.00	35.00
Reitz Leicavit for III	24.00	16.00	10.00
Novoflex Bellows for Leica, Contax	39.50	.....	15.00
Novoflex for Exakta, Pentacon, etc.	39.50	.....	15.00
Novoflex Reflex Bellows for Leica-Contax	145.00	75.00	55.00
Novoflex tripod and Stereo Rackerov.	25.00	.....	12.00
Novoflex Universal Panoramic attach.	11.50	.....	.....

	New	Used	Trade-in
Exakta VX f2.8 Tessar pre-set MX	250.00	135.50	105.00
Exakta V2 Biogon pre-set MX	335.00	185.50	125.00
Exakta V2 f2.8 Auto Westar	239.50	165.00	125.00
Exakta V2 f2.8 Auto Westar	341.70	197.00	155.00
Contaflex f2.8 Auto Westar	169.00	87.00	70.00
Contaflex f2.8 Tesser pre-set MX	180.00	105.00	75.00
Contaflex f2.8 Biogon P.S. c.	199.00	119.00	80.00
Pentax C-312 Westmar Auto	249.50	119.00	95.00
Pentax C-312 Biogon pre-set	249.50	129.00	100.00
Pentax FX f2.8 Tesser MX	99.50	55.00	30.00
Pentax FX f2.8 Prime MX	145.50	67.00	45.00
Pentax FX f2.8 Prime P.S. MX	165.00	69.00	45.00
Praktiflex II Biogon c.	69.00	45.00	
Praktiflex II Biogon RF c.	350.00	137.50	105.00

35MM CAMERAS

	New	Used	Trade-in
Anso Kompton 12 RF MX	\$125.00	\$ 73.00	\$ 50.00
Anso A2 f4.5	66.50	32.50	28.00
Anso C-312 RF case and flash	66.50	32.50	28.00
Anso C4 f2.8 RF MX	84.50	46.00	35.00
B&H Fotof 12 RF MX	486.00	200.00	200.00
Bolsey B 13.2 RF c.	49.50	19.00	10.00
Bolsey B 13.2 RF case and flash	66.50	32.50	28.00
Bolsey C 13.2 Reflex RF c.	85.50	35.00	30.00
Bolsey C 13.2 Reflex RF c.	99.50	67.50	50.00
Claris f2.8	37.50	30.00	
Contessa 12.8 RF meter MXc	153.00	85.95	70.00
Kodak 25 f3.5 RF	52.00	29.00	20.00
Kodak Bantam Spec. 14.5 f4	56.20	29.00	20.00
Kodak Bantam Spec. 12 RF c.	57.00	40.00	
Kodak Pony 12.8 f4.5 C*	29.50	17.00	12.00
Kodak Pony 13.5 f4.5 C*	29.75	18.00	12.00
Retina II f2.8 Xenon RF	59.00	48.00	40.00
Kodak Signal 13.5 Ektar RF MXc	127.50	65.00	50.00
Kodak T-12 Xenon RF MX	127.50	44.50	37.00
Kodak T-12 Xenon RF MX	127.50	44.50	37.00
Minox II 13.5c	139.50	85.00	60.00
Mercury f2.8	41.50	17.00	12.00
Robot II 12 Tesser Rap Seq	39.00	25.00	
Robot II 12 Biogon Rap Seq	54.00	30.00	
Robot Star II 1.9 Xenon Rap Seq. c.	89.50	57.00	40.00
Robot Star II 1.9 Xenon Rap Seq. c.	127.50	79.50	55.00
Voigt Prominent 12 RF MXc	220.00	105.00	80.00
Voigt R 12 RF MX	270.00	136.00	105.00
Voigt Vittessa 12 RF MXc	127.50	84.00	55.00
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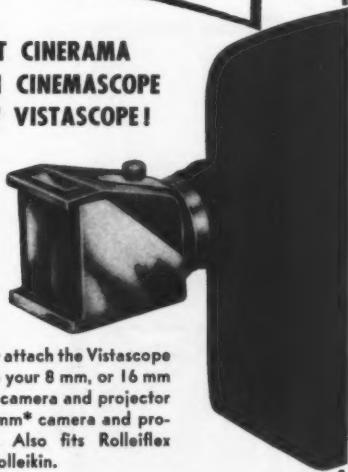
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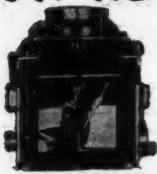
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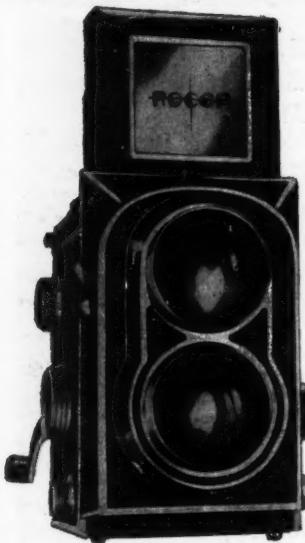
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(Continued from page 14)

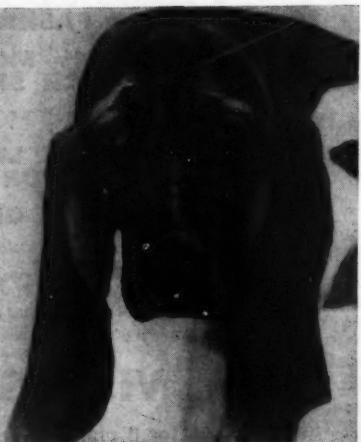
DOG DAYS . . .

The winner of this year's Gaines Dog Research Center photo contest is . . . Burt Owen, a frequent contributor to MODERN. His picture of a solemn boxer peering through a window won him \$500.



The boxer had it.

But behind each tale (or tail) of success, is a heartrending tail (or tale) of failure. The sad basset-hound, (named Stue), is owned by William Hague, a friend of Owen's. Owen wanted to see his friend's dog win a prize. At the same time he sent in the picture of the boxer. The boxer won. Stue? Well Stue, there's always next year.



Stue in stew.

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Kolleiflex Auto Tessar 3.5 'XM'.	219.50	116.95
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58mm Biator F:2 Pre-set.	120.00	63.95
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Canon, Serenar F:1.8, Rldr.	295.00	142.95
Contaflex Tess. 2.8, autom.	169.00	86.50
Contessa 35 Tess. 2.8, Rldr.	142.00	84.95
Contax II Sonnar F:2.		84.95
Contax IIIA, Sonnar F:2.	336.00	158.00
Exa, 28, Latest.	412.00	196.00
Kodak Pony F:4.5 Synch.	29.75	17.95
Kodak Stereo F:3.5.	84.50	51.95
Kodak Signet, Ektar 3.5, Rldr.	75.00	42.95
Leica G, Summar F:2.		76.00
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Mercury II, F:2.7 ctd.	41.50	14.00
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35mm Biogon F:2.8 W.A.		78.50
35mm Biometer F:2.8 W.A.	183.00	126.95
50mm Sonnar F:1.5		87.95
50mm Nikkor F:1.4	199.50	118.00
75mm Biator F:1.5 coupled.		106.50
85mm Sonnar F:2.	229.00	87.95
85mm Nikkor F:2.	179.50	89.00
135mm Sonnar F:4.	146.00	78.95
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All this for only \$12.95

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the last word

Two-man Photo

Sirs:

This picture of an MG-TC Special racing car was intentionally blurred as far as the background was concerned in order to enhance the feeling of speed. It took several tries and the cooperation of my friend, Dick Lang, to make the shot. The blurred image on the right side is actually a tree. In making the exposure, I stood behind a tree near the track (where I'd hidden



from the camera) and signalled to Dick, who was stationed further back in the woods, when to begin panning the Speed Graphic and trip the shutter. This particular shot was made by existing light at a shutter speed of 1/100 sec. at f/16. Super-XX film.

La Crescenta, Calif.

Bill Claxton

Dick Lang

"Gladys"

Sirs:

"What Is Glamour" by Samson Raphaelson in the April issue of MODERN was indeed a good article! It helped me to understand why it is so difficult for the photographer's wife to be his model and achieve a "Gladys," although I feel it can be done.

Pt. Orange, Fla.

Mrs. W. R. Cunhus

Sirs:

Thank you for Samson Raphaelson's brilliant analysis in the April issue. This is the sort of literate and thought-provoking article that I, for one, would like to see more frequently. How rare is the perceptive pen in the desert of contemporary how-to-do-it jargon!

Cambridge, Mass.

Percy Crosby

Music Appreciation

Sirs:

I just received my April issue of MODERN PHOTOGRAPHY and noticed that the bottom left picture on Page 27 says that the man pictured is playing an oboe. Being a music teacher with photography as a hobby, I can inform you that the instrument pictured is not an oboe but a bassoon.

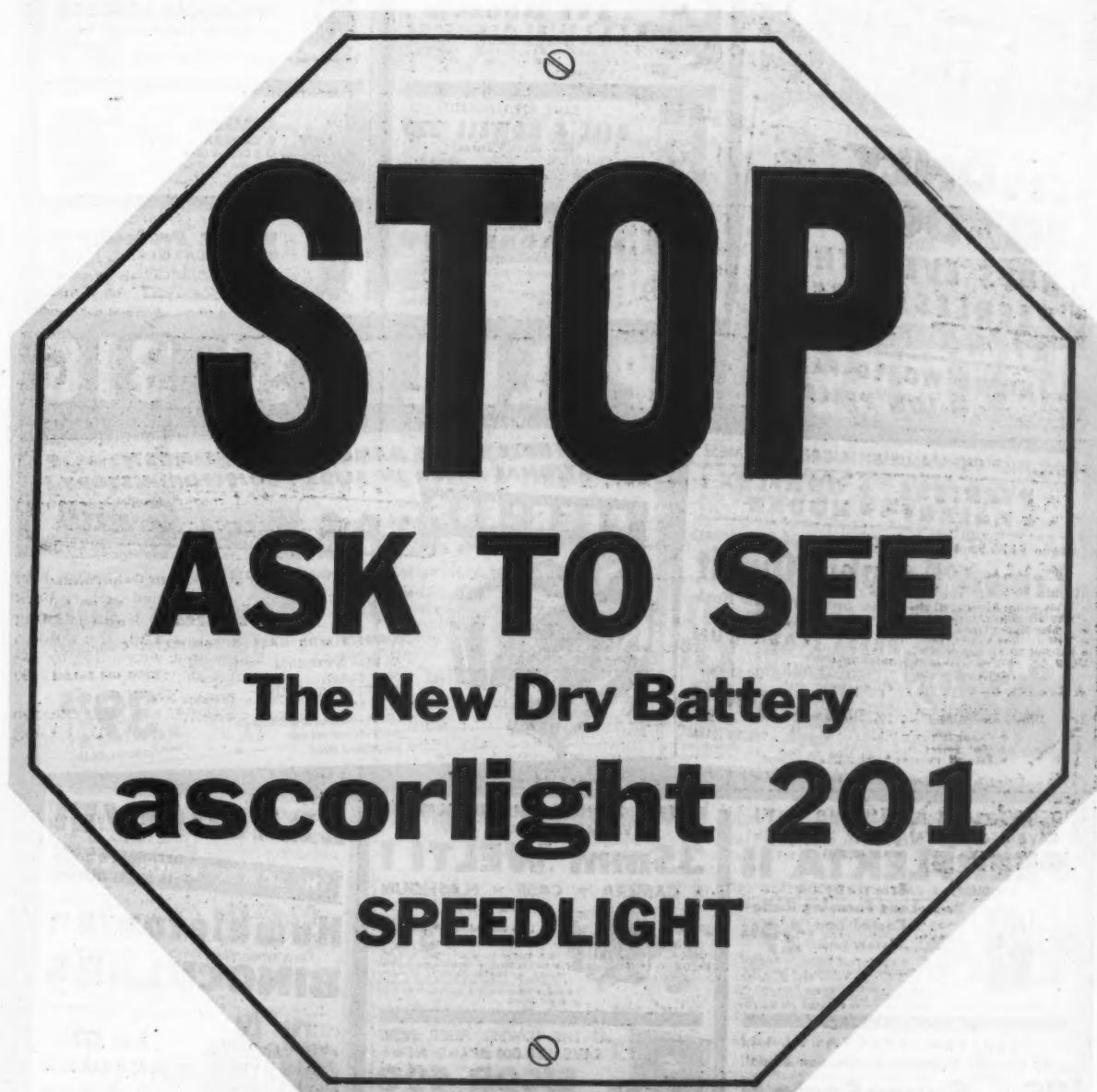
Stratton, Nebr.

George R. Barlow

Sirs:

Without going into a long discourse, the instrument the man is playing is

(Continued on page 26)



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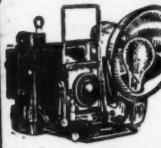
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THE LAST WORD

(Continued from page 22)

a bassoon and not an oboe. They are both of the double reed family of which the English horn and sarrusophone are also members.

Cobleskill, N. Y. Frank Rollins

Sirs:

Your caption writer was mistaken. The instrument is a double reed instrument, but it is a bassoon—not an oboe. Cobleskill, N. Y. Henry Sollman

Sirs:

On page 27 of your April issue, you refer to Mr. Grunzweig's musician as an oboist. He may not be a "snake-eater," but the instrument he is playing is a bassoon.

Brooklyn, N. Y. Julius Morse

Sirs:

Calling that contraption an oboe is almost as bad as calling a rifle a gun in the army. I am no musician, but I do know a bassoon when I see one.

Chevy Chase, Md. Fussy Fentress

Projection in lighted rooms

Sirs:

In your April issue, Dr. Cinema tells about group filming projects. Our church social group has also produced a film, but we have trouble darkening a room enough during the daytime to show it. Is there any solution to this problem?

Chicago, Ill. Virgil B. Kreig

• Ask your photo dealer to get you some information on screens designed for movie or slide projection in lighted rooms. Radiant Mfg. Co. has a new one called the "Classroom" with a full 90° viewing angle.—Ed.

Sirs:

Here is a picture of a rocker I assembled from parts, to agitate my cut film tank. It works very well, and as you can see it is simple to make from odds and ends. These included an old 6-inch oscillating fan motor; connecting rods from a refrigerator compres-



sor, for the uprights; a piece of Masonite board; and 12 inches of 1/4-inch cold rolled steel. For the bumper I used a piece of a broom handle with a rubber crutch tip. And the 75-watt lamp in a porcelain receptacle was added to reduce the voltage.

Albany, N. Y. A. H. Savage

Presenting...



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The Automatic Exakta VX with the latest creation by Carl Zeiss—the New, glamorous f. 2.0, Biatar 58-mm. lens with Automatic Diaphragm! This is another milestone in the uninterrupted progress of Exakta technique since this famous camera was designed two decades ago. The Automatic Exakta VX with Penta Prism eye-level viewfinder and Split-image Rangefinder and 58-mm., f. 2.0 Automatic Zeiss Biatar Lens is priced at \$392. Also available with waist-level finder. • The Automatic Exa has most of the advantages of 35-mm. automatic, single-lens, reflex photography in a camera foolproof enough for a child to use. The Automatic Exa is equipped with the 50-mm., f. 2.8 Automatic f.l.a. Westarar Lens. Automatic Exa with f.l.a. Westarar f. 2.8, 50-mm. lens is priced at \$129.50. Automatic Exa with f.l.a. Westarar f. 2.8, 50-mm. lens and Penta Prism \$159.50. Automatic f.l.a. Westarar alone, \$69.50. • Should you choose to make one of these cameras yours— you will have the assurance. In any company of cameras, whether foreign or domestic, there is nothing to challenge the distinction of an Exakta or Exa.

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modern STEREO

BY TOMMY THOMAS



Correct exposure is important, but it shouldn't interfere with taking pictures

The best stereos are often taken in a hurry. Too many people are confused about exposures and exposure meters, worried whether or not to use fill-in flash (is it really worth the trouble?) and, in general, "upset" by technical things that really have very little to do with the pleasure of taking pictures.

Most stereos are taken just for the fun of it, and it shouldn't be necessary to concentrate on anything except the subjects and scenes to be photographed. So . . . I'd like to recommend my own system of "Casual Type" picture taking that will enable you to take 99 per cent of your for-fun stereos with only a minimum of thought being given to the technicalities.

First of all, use Type A Kodachrome for both your outdoor and your indoor shooting. Indoor film gives you certain advantages. For one, you can switch from shooting outside (with conversion filters) to inside by merely removing a pair of filters from in front of your lenses. The conversion filters for this purpose (by different manufacturers) are very similar, yet they're not all equally good in obtaining results. Some are a bit too "orange" to be really perfect, and some not orange enough. Personally, I've found the Type A conversion filters marketed by

if you were using outdoor film without any filters.

Most of the outdoor stereos that you will take will be in the bright sunshine, so why not make it a habit to use a "basic" exposure of 1/50 sec. at f/6.3. That will take care of all of your average scenes and subjects. Working from this basic exposure, change your lens opening half a stop up or down to correspond with the lightness or darkness of your scene or subject. Let's follow this through with Photo 1 as our guide. The girl was wearing a light-colored dress, and she herself was light skinned (lots of tone). If we had wished to concentrate on this portion of the scene alone (inside the small, white frame) it would have been necessary to close the lens down half a stop to f/8. On the other hand the overall scene, without the girl, was mostly of a darkish nature, calling for an opening up of half a stop, to f/5.6. The girl was too light and the overall scene too dark—so the average exposure is used, f/6.3. (If you're in doubt about this, there's an explanation of the "average" scene on page 74 . . . Better check.) Remember: for most scenes use 1/50 second at f/6.3. Light-colored scenes or subjects, f/8; dark-colored scenes or subjects, f/5.6.

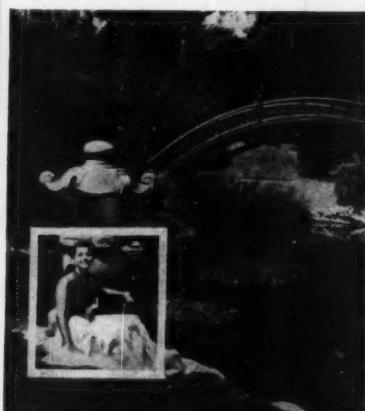
Use a meter

Continuing in this vein of "doing things the easy way," it's definitely recommended that you get yourself a photo-electric exposure meter. There are many times when a meter becomes absolutely essential—the only intelligent way to determine exposure.

My method of use is simple, but effective. I use an incident-type meter and always point the meter directly at the sun if the sun is shining right on the subject. When the sun is hidden, I aim it at the brightest part of the sky. That's all there is to it . . . and it never fails. Naturally, the reading I get is my "basic exposure" and needs to be interpreted in terms of the scene and subject, just as described previously. If the scene or subject are average, then use the meter reading directly as indicated. If on the light side, close down half a stop . . . if it is dark, open up half a stop. It's a fast, efficient system for taking all of the mystery out of using exposure meters.

Any incident type of photo-electric exposure meter or one that can be adapted to make incident readings will work here; it needn't be an expensive

(Continued on page 88)

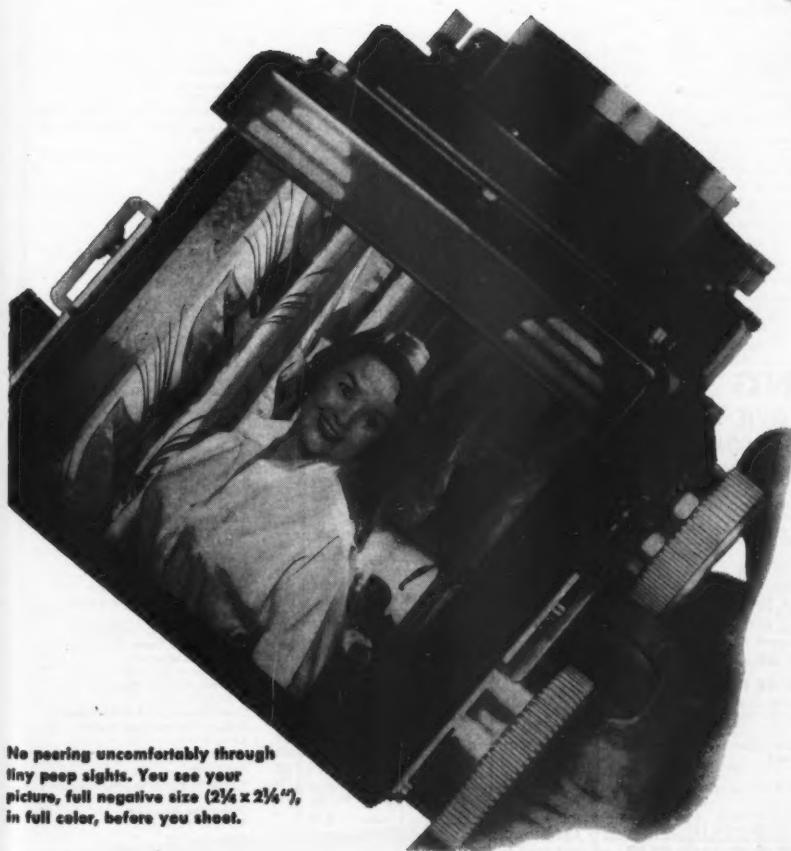


1. Base your bright sunshine calculations on one exposure: f/6.3, 1/50.

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Xenar f:3.5 lens... and the ability to
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3 section with geared center post, adjustable crank action, non-slip. Extends to 70", collapsed 28". Weight: 4 1/2 lbs.

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Wide Angle Lenses or Telephoto Lenses
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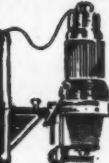
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- 135mm f/4.5 coated lens
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new photo books

SUCCESSFUL COLOR PHOTOGRAPHY.
Andreas Feininger. 271 pages. Prentice-
Hall, Inc., New York. \$4.95. Eight pages
of color illustrations, plus charts.

This is a companion piece to Feininger's *Successful Photography*, which dealt only with black-and-white. As a book on color photography it is almost unique—with the exception of a few illustrations of the theory of color, made from plates supplied by Eastman Kodak Co., this book is without pictures. Apparently, Feininger took an "all or nothing" attitude on this point, and actually, once you get used to the idea, the book seems to be just as good as if it were full of color. For this much credit must go to the lucid writing with which Feininger presents his material.

Although this book has 271 pages, a large number of them are full of routine information on the theory of color, nature and technical characteristics of color films, exposure and processing instructions—all of which data are obtainable from a number of popular source books. In fact, what has been done here is simply to bring it all together in one volume, restating the known facts in reasonably clear, concise language. If that were all that this book contained it would be a poor volume to recommend.

What makes it worth the price of admission (and well worth it) are those sections in which Feininger starts to give his opinions about color photography, what makes for good pictures, what causes bad ones (not only technically, but esthetically), and so on for a long and wonderful list. For, if there is anybody in photography who has more opinions on more subjects than Feininger, it has not yet been our pleasure to meet his writings. And these opinions are stimulating, engaging, frequently exciting, sometimes questionable, but certainly worth everyone's attention.—J. W.

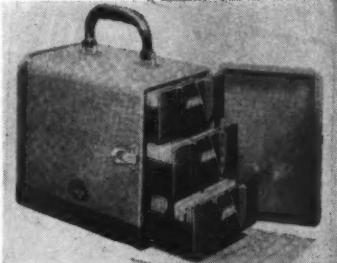
**THE PRACTICAL WAY TO PERFECT EN-
LARGEMENTS** by Joseph Foldes. 190
pages, 24 chapters, 353 photographs and
illustrations. Camera Craft Publishing
Co., San Francisco. Price \$5.

This volume should be in the library of everyone interested in producing fine enlargements. It will help the beginner learn this craft from the ground up. For the advanced worker it will prove to be a handy reference guide in which he will find hints and techniques with which to improve his own work.

The first chapter deals quite logically with the real basis for good enlargements—the making of good negatives. The photographer is taught how to recognize good and poor negatives and what caused them. Negative density,
(Continued on page 94)

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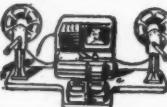


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Powered by dry batteries, the unit uses two heavy-duty #492 Evereadys, and has a guide number of 50 with Kodachrome, Daylight Type. The head of the Six is similar in appearance to those of earlier Strobonars, but the reflector and tube mounting give added light output with a wide, more even spread. Built

(Continued on page 124)

THE 16mm BOLEX LEADER FROM

\$269⁵⁰

with one Lytar 25 mm F:1.9 lens

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the

16mm MOVIE CAMERA which meets
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The Bolex Leader — the price leader of the great Bolex 16 mm line — starts at only \$269.50. Yet it offers the same fine Swiss precision mechanism and uses the same matchless lenses as the world-famous Bolex Supreme.

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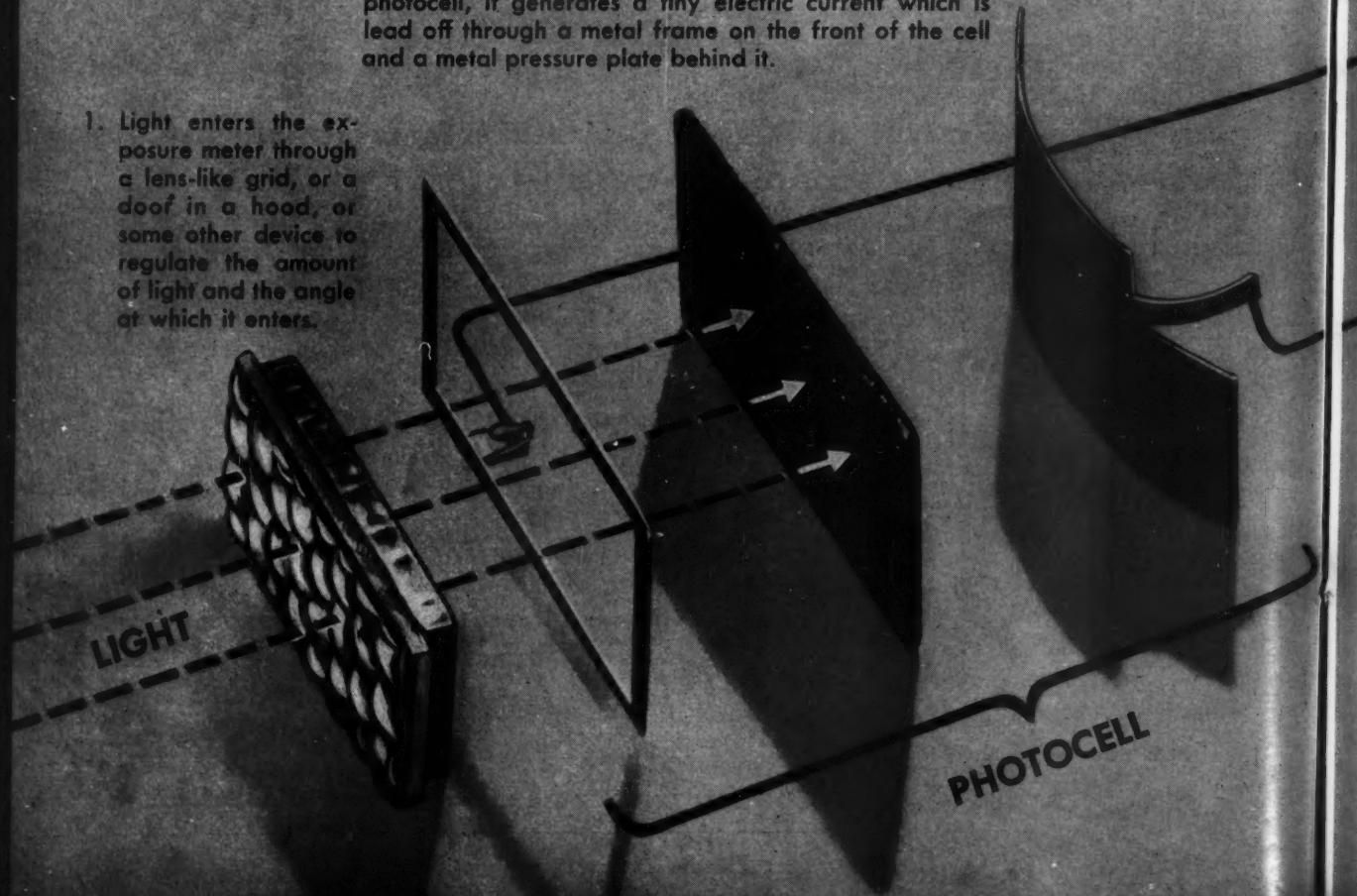
BOLEX

39 PGS. ON EXPOSURE!

First, meters: How they work; how to test, choose the best, and use . . . by Charles Hellman and Modern's editors

YOUR PHOTO-ELECTRIC EXPOSURE METER: WHAT MAKES IT WORK?

1. Light enters the exposure meter through a lens-like grid, or a door in a hood, or some other device to regulate the amount of light and the angle at which it enters.
2. The photocell is usually an iron plate coated with a thin layer of selenium, over which is deposited a layer of gold so thin that it is transparent. When light strikes the photocell, it generates a tiny electric current which is lead off through a metal frame on the front of the cell and a metal pressure plate behind it.



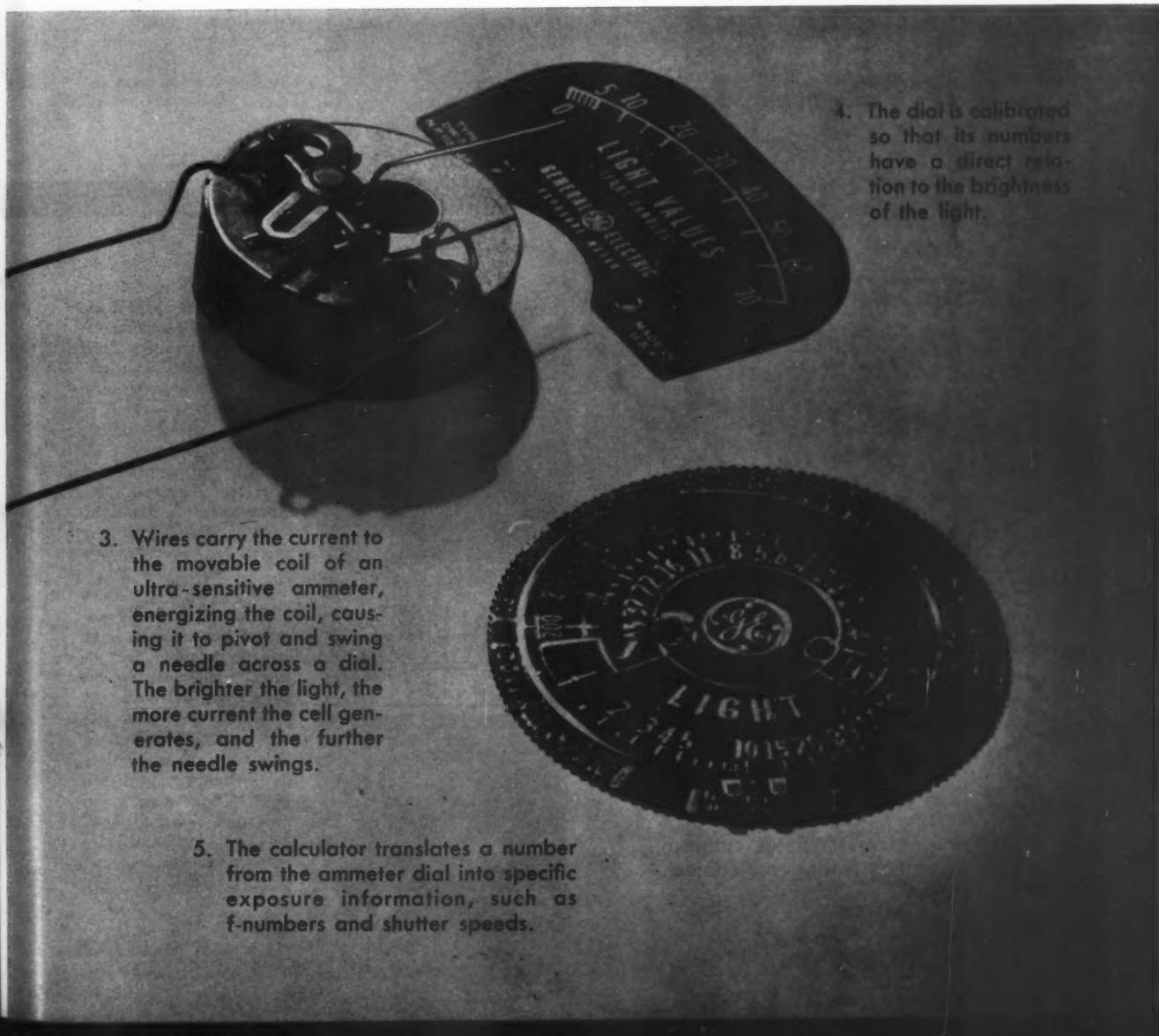
ALL PHOTO-ELECTRIC exposure meters work on the same principle. The heart of the meter is an energy converter, and a typical example of one is shown below. Although you may not want to become a photographic engineer, if you know how your exposure meter works this knowledge will help you greatly in two ways. It will guide you in buying an exposure meter, and it will help you to get consistently better pictures when using it. Here's the story.

It is the light that is reflected from the subject and passes through the camera lens that makes the exposure on the film. What would be a more logical use for the meter than to aim it at the subject and measure the brightness of the light reflected from it? This is the basis of the reflected light meter. But the meter must read *only* the light reflected from the subject, and the bare photocell is not sufficiently selective to do this unaided—it will register the light from too wide an area. In technical language, "it has a wide acceptance angle." This is just the opposite of what we want—in fact, the narrower the

acceptance angle, the more suitable the meter is for measuring reflected light. However, this requirement presents a new problem—as the acceptance angle is reduced, the meter becomes less sensitive. In practice a balance is struck between a suitable acceptance angle and useful sensitivity.

Another approach is to start with the premise that if you measure accurately the light falling on the subject, then correct exposure can be calculated. This is the so-called incident light method. The meter is used with the photocell pointed *at the camera*. All the light falling on the subject ultimately affects the exposure for that subject, so it's desirable that the meter measure light from the widest possible angle (exactly the opposite of the problem with the reflected light meter). On the next page are shown some ways in which the photocell is adapted to reflected light and incident light measurement. If you study the drawings you will have a much better idea of why any exposure meter looks the way it does.

G.E. DW68 AND SIXTOMAT PARTS HAVE BEEN COMBINED HERE TO SHOW A TYPICAL METER.

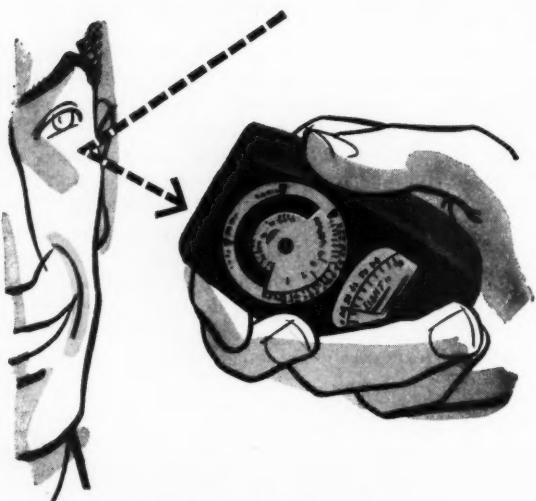


3. Wires carry the current to the movable coil of an ultra-sensitive ammeter, energizing the coil, causing it to pivot and swing a needle across a dial. The brighter the light, the more current the cell generates, and the further the needle swings.

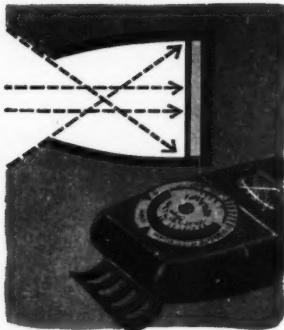
5. The calculator translates a number from the ammeter dial into specific exposure information, such as f-numbers and shutter speeds.

4. The dial is calibrated so that its numbers have a direct relation to the brightness of the light.

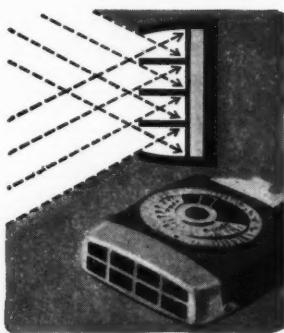
THIS METER NEEDS A NARROW VIEWPOINT



Reflected light meter should measure only light reflected from subject.



1. Simplest method to reduce the angle of acceptance of a photocell is to recess it deeply. That means that a big piece of the meter's body will be nothing but a hood. On the General Electric DW-68, the hood serves as a convenient mount for the large calculator dials. The hood is designed to be removed easily for incident light use (see page 46).

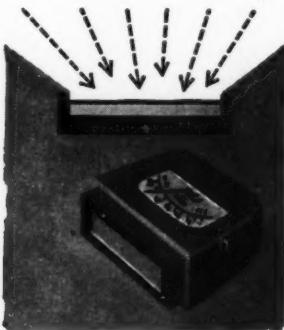


2. The size of the hood can be reduced somewhat by introducing a series of baffles. The effect of these is to create a number of small, separate chambers, each having a rather narrow angle of acceptance. In the drawing, note the angle at which light enters each of the chambers. The DeJur Dual Professional has such a hood on hinges (page 47).

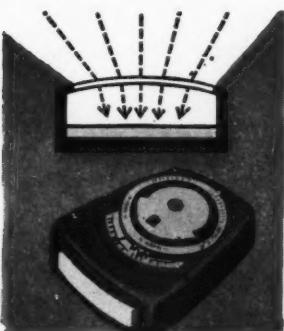
THIS METER NEEDS TO SEE ALL THE LIGHT



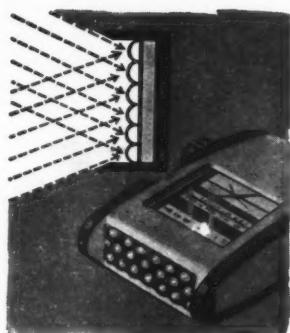
Incident light meter faces camera, measures light falling on subject.



1. Simplest method is to mount the cell as close as possible to the surface of the meter housing. This type can record accurately light falling on the subject from the front, but it will not respond well to side lighting: this may be an important factor under some conditions. Such an arrangement is found in the G. E. DW-68, as shown at left.



2. A meter basically designed for reflected light can be adapted for incident light measurement by placing a translucent plastic adapter over the cell opening. Light from different directions falling on the adapter is diffused by it in transmission and measured by the photocell. Unless specially designed, such meters won't respond well to side light.



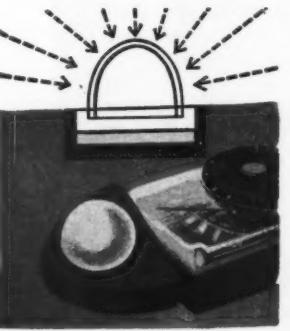
3. To control the angle of acceptance without bulky hoods and with no appreciable loss of light, many meters have a plastic grid consisting of dozens of tiny lenses. Behind the grid there's usually a small honeycomb baffle. Each tiny lens, and the wall of the baffle behind it, limits the angle of light passing to the photocell.



4. Some meters are designed with a small, perforated door which drops over the photocell to cut down the light when the meter is used in very bright illumination. The small size of the perforations serves the double purpose of reducing further the acceptance angle of the meter. This is desirable, particularly in bright light.

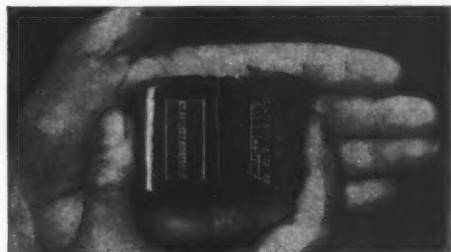


3. The Invercone, an incident light adapter for the Weston Master, is designed to pick up some side light, as well as front light. The curved sides protrude above the level of the meter body for this purpose. However, although this is an efficient adapter, its location in relation to the meter scale makes it an awkward device to use.



4. On the Norwood Director meters, which were designed basically for incident light, a plastic dome, called a Photosphere, protrudes over the cell. This increases the response of the cell to light from the sides, top, or bottom, and even to some back light. This is an extremely efficient way of gathering light for the cell to measure it.

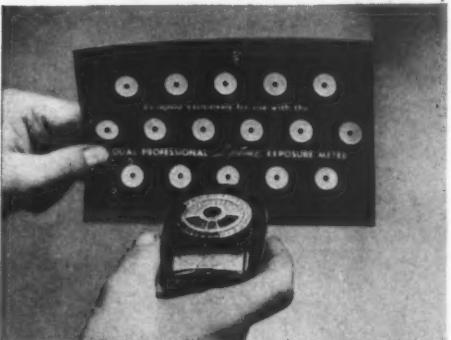
3 SIMPLE TESTS FOR YOUR METER



POINTER BALANCE: Cover cell opening to cut off all light. Pointer should be at zero; if not, adjust the zero set screw. Tilt meter in various directions. Pointer should not move more than equivalent of $\frac{1}{3}$ stop despite position of meter.



STICKY MOVEMENT: Aim cell at light until pointer is at about halfway mark. Cover cell and uncover, several times. Pointer should go to zero and back to original position quickly, smoothly. Repeat test where light is so dim pointer barely moves off zero. It should move smoothly.



ACCURACY: Absolute tests are difficult, but here's a quick check. In most of Temperate Zone, clear sunlight is fairly constant from 11:00 A. M. to 1:00 P. M. An incident light meter, set at ASA 10, held with cell vertical, sun falling directly on it, should indicate exposure of 1/50 sec. between f/5.6 and f/8. You should get same reading from reflected light meter using DeJur test card which MODERN will send on request (see page 53). Let light fall directly on card, hold meter 4 in. from it as shown. Make tests in average surroundings, not in such bright areas as beach.

WHAT'S THE BEST EXPOSURE METER?

Here's a new standard to judge by—utility. Check your picture taking needs against these important features.

1



2



IS IT CONVERTIBLE?

If a meter measures only reflected light, an inexpert user may make serious errors with it, particularly with side-lighted and back-lighted subjects.

In contrast, an incident light reading with a well designed meter is frequently the simplest guide to correct exposure for the non-expert. But the incident meter is of no use where the photographer is illuminated differently than the subject. For example: the meter cannot be used from inside a room to read the illumination outdoors. There you need a reflected light meter. And the critical user may find the incident meter not selective enough in working with a subject of wide brightness range. So, a meter should be able to measure light both ways.

3



4



ARE ACCESSORIES NEEDED?

If a meter can be converted from reflected to incident light use (or vice versa) without the need for carrying around extra accessories, it obviously has important advantages in convenience and portability. The Dual Sixson is basically a reflected light meter (*photo 1*). A simple translucent plastic roller blind slides over the cell opening to convert it to incident light use (*photo 2*). This is one of the few meters with integral convertibility (the Sixtomat also has it) designed to operate over its full bright-to-dim range with *both* reflected and incident light. The Dual Sixson has a moderate range, and is not designed for critical use.

Correct exposure is the keystone of the photographic process. No subsequent darkroom tricks can completely make up for improper exposure of the film, particularly if you're working with color. To get consistently correctly exposed films, under a wide variety of lighting conditions, proper use of a good meter is a must.

Meters vary tremendously in such obvious characteristics as size, shape, weight, price. However, there are many more fundamental differences, which are of even greater importance. For example: incident light vs. reflected light types; manual, semi-automatic, or automatic operation; variations in scale design; differences in meter sensitivity; and many other factors vital in the use of the meter. All of these add up to how useful the meter will be in solving *your* picture-taking problems. So, we'll look at exposure meters from a new angle—utility. And the main questions we will ask, and try to answer, will center around how well each design feature contributes to easy, accurate use in get-

ting correct exposure. Finally, we will attempt to distinguish between those meters suitable for the critical user, under a great variety of conditions, and those more suited to the casual picture taker.

Exposure may be calculated by measuring light reflected from the subject, or light that is falling on (incident on) the subject. Bitter controversies have raged over the merits of the two methods. Usually, both sides are soothed by stating that in the hands of experts either type of meter can produce equally good results. But what if you're not an expert, and your meter restricts you to one method only? It's true that both methods are useful under different circumstances. It is also true that in many cases one method is much preferable; sometimes only one method can be used. (See, *How to Use Your Exposure Meter*, page 52.) So, the main question is not one of incident vs. reflected light meter, but rather: "How well and how conveniently does this meter measure *both* incident and reflected light?"

5



6



7



8



ARE ACCESSORIES HANDY?

The Bewi Automat is typical of a large group of meters which are converted from reflected (photo 7) to incident light use simply by placing a translucent panel over the cell (photo 8). The panel for the Automat is attached to a metal chain, thus is always handy, and may be left in place except when reflected light is being measured.

(Continued on next page)

9



10



11



12



WHAT PRICE CONVERTIBILITY?

Convertibility starts to become a problem when it involves separate accessories which must be added to or removed from the meter in order to make it do different things. If the part is tiny, it gets lost; if it's big, it's another item to carry in the pocket or gadget bag. If it takes time to convert the meter from one method to another, a valuable picture opportunity may be lost. All of these things should be considered in determining what kind of meter you want. You may find the answer in a second meter (perhaps a wide-range reflected light meter for general use and a simplified incident meter for special conditions, or vice versa).

IS IT SENSITIVE ENOUGH FOR YOUR NEEDS?

The exposure meter measures light intensity. The lower the light level that the meter can measure, the greater is the sensitivity of the meter. It is an easy matter to determine the useful sensitivity of a meter. First, examine the meter scale and note the smallest reading that is *clearly observable*. Some scales are calibrated so that the smallest scale reading is almost indistinguishable from the zero mark. Next, set the film exposure index on the calculator to an arbitrary value—100 on ASA type meters, 80 on a Weston meter.

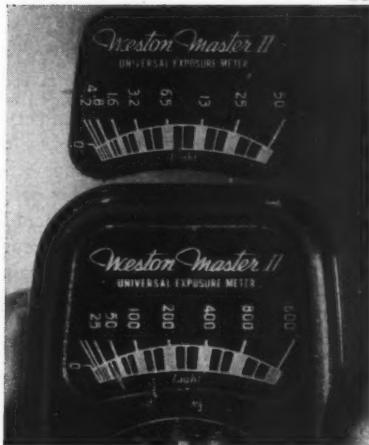
Now assume that you have measured the light (a very dim light) and the meter shows its lowest useful reading. Set the calculator according to this reading and note the shutter speed indicated for a lens opening of f/2. If the indicated exposure is 1/5 second or longer, then the meter is designed to have high sensitivity and should

be able to indicate exposures in rather poorly lighted situations. (We say "should be able" because the actual meter cell might not be quite as sensitive in dim light as the scale may indicate it is supposed to be.)

If you are at all interested in taking pictures with fast films under dim existing light conditions, then your meter should be at least as sensitive as the standard given here. Some meters on the market show much less sensitivity—these may do if you are entirely interested in outdoor or indoor pictures under bright light. Keep in mind, however, that you may be handicapped by a meter that is of little use in dim light.

Closely tied in with the sensitivity of a meter is the range of light intensities which the scale is designed to handle. This subject will be discussed fully in a separate section on pages 50 and 51.

13

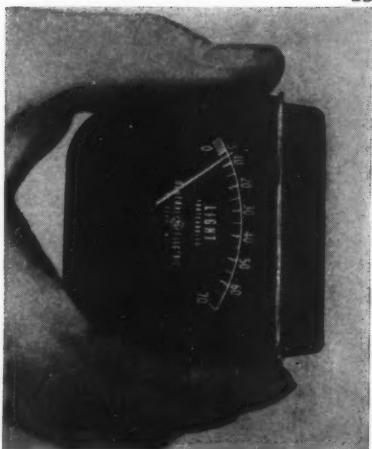


HAS IT A LONG SCALE?

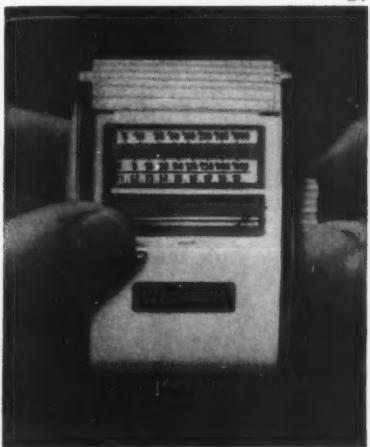
Exposure meters are called on to measure a wide range of light intensities. If the meter has only a single scale, the result may be some crowding or bunching of the scale divisions, particularly at the ends. This makes it hard to use and may be inaccurate. The effect of a much greater scale length may be had by controlling the amount of light falling on the cell, usually with a baffle of some sort.

The Weston Master II combines a double scale (photo 13) with a hinged baffle to control the light (photo 14). In bright light the baffle stays closed and the 0-1600 scale is visible. Notice how little space is provided between 0 and 50, an area of great importance. In dim light, you open the baffle, and a lever arrangement automatically shifts the low range (0-50) scale into position. This is an extremely wide range scale, a valuable feature.

15



17



14



16



The G.E. DW68 has only a single scale (photo 15), but by means of an ingenious hood and calculator dial three separate sensitivity stages are provided. In very bright light it is used as a reflected light meter with the hood on and the hood baffle closed; for dimmer light the hood baffle is opened; in very dim light the hood is removed and the meter measures incident light. The calculator (photo 16) provides separate indicators for the three kinds of use (arrows).

The Sixtomat (photo 17) features a dual scale, and electrical control of the cell's sensitivity. Basically, the cell is quite sensitive, for use in fairly dim light. When you turn the control knob to bring the bright-light scale into use, a small resistor is switched on, thus cutting down the current flow to the ammeter coil. The effect is similar to placing a baffle over the cell.

ACCESSORIES HERE, TOO?

Many meters cannot be operated over a wide range of light intensities without separate accessories. These take two forms: (1) baffles to be placed in front of a sensitive cell when it is used in bright light; (2) additional photocell elements (called a "flag" sometimes) to be added to the photocell so it can measure very dim light. The Horvex (photo 18) is shown with the additional cell in place.

(Continued on next page)

18



HOW GOOD ARE THE SCALES AND CALCULATOR?

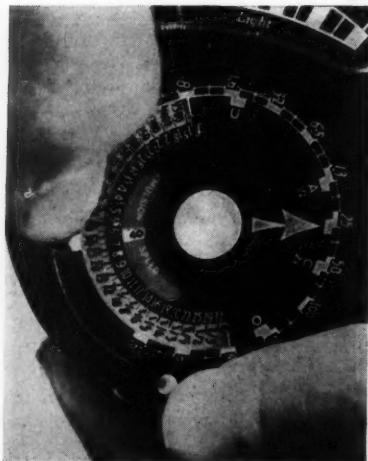
The calculator is one of the most important parts of your exposure meter. It should be easy to read, easy to use, and most important, it should have a range of capabilities to match the uses to which you wish to put the meter. For example: Do the aperture and shutter speed settings correspond with those on your camera? If not, it will always be necessary to make compromise settings. Does the calculator include a set of the Light Value Scale numbers found on the new Compur LVS shutters? Most new cameras with Compur shutters will be fitted with LVS cross-coupled aperture and shutter speed settings. If you have such a camera or are considering buying one, you should certainly consider having this feature on your meter.

The intensity of the light that is being measured is

indicated on the meter scale. Some meters have simple scales that indicate only full stops. This may be satisfactory for the casual picture taker but the careful worker should have a scale divided into 1/3 stops (the ASA standard) to provide accurate exposures for color or for black-and-white movies. In the effort to include these divisions some engineers have produced cluttered, hard-to-read scales. Examples of excellent, open scales are the Weston Master II (photo 13) and the G.E. PR 1 (photo 10).

The film exposure index setting (ASA 100, etc.) must be changed when different films are used, or when going from daylight to tungsten. Can you do it without breaking a fingernail? And once set, does it stay set, or go sliding off if you happen to brush against it?

19



WHAT'S THE SPEED RANGE?

New high speed films have exposure indexes of up to 400, and will go even higher. If you ever intend to use them, your meter should certainly have a setting for 800 or 1,000. It should be able to handle the slowest films normally used, so a minimum setting of 6 should suffice for ordinary picture taking. However, if you intend to do much copying, and are a critical user, you need a meter with a minimum far below 6. The Norwood, for instance, goes to .1, and some others to .2 and .3.

The Weston Master (photo 19) has a wide range, easy to read film speed scale (see number 40, by thumb), which is rotated to get the desired setting and shows only one number at a time. The Weston DR (photo 20) employs a rotating baffle which cuts off light to the cell in proportion to the speed of the film.

20



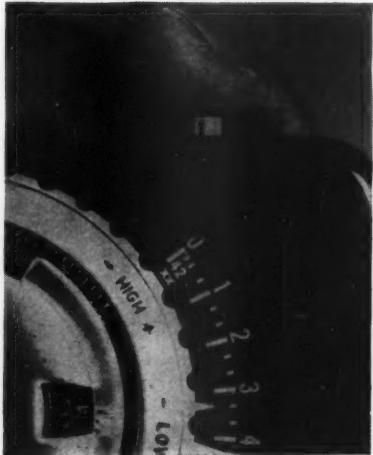
21



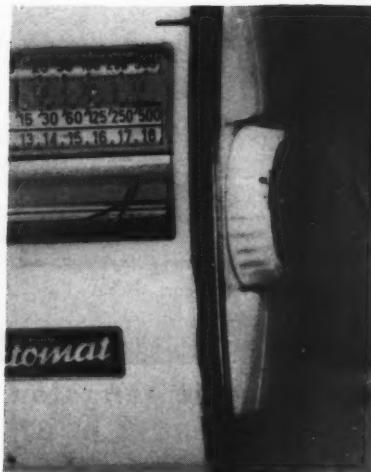
IS IT EASY TO OPERATE?

An exposure meter is a device designed to help you solve a complex problem (correct exposure) in a hurry. Many a fine picture has slipped by while photographers tried to figure out what the meter was recommending. Most meters have manual computers—you do all the work. In a well designed meter this can be rapid. The DeJur Dual Professional (photo 21) can be operated quickly with one hand. The G. E. PR 1 is also a manual meter with a semi-automatic "memory" feature—you point the meter, press a button (photo 22), release it, and the needle remains in position while you work the calculator. In using the semi-

22



23



automatic Sixtomat (*photo 23*), the calculator knob is rotated as the meter is pointed at the subject. When the needle and both lines intersect, the calculator is set and correct exposure may be read off.

Finally, there's the fully automatic Bewi Automat (photo 24). Film speeds are set by a knurled wheel (arrow). Then you aim it, press a button, let it go—the correct exposure is shown on a dial in divisions of full stops. This meter has a moderate sensitivity range and would be excellent for a beginner or casual picture taker.

24



DO YOU NEED THESE SPECIAL FEATURES?

Some meters have important features whose value is not obvious to the casual observer. For example, the U and O settings on the calculator dial of the Weston Master II (*photo 19*). The distance between these two marks indicates the latitude of current black-and-white films. Proper use of these settings makes it possible to get the utmost speed out of your film by picking the minimum correct exposure for a given lighting condition. If you take many pictures under dim light, where maximum film speed is important, proper use of this feature will be of great help (*see page 63*). However, if you are always outdoors making color slides in bright light, this is an unimportant feature, *for your needs*.

The Weston also has the A(1/2) and C(2x) settings (photo 19) which show at a glance how to double or

halve the exposure. The G.E. PR 1 does the same thing with tines on each side of the calculator pointer (photo 22). This feature would be valuable to the outdoor color photographer, for the distance from A to C, or from one tine to the other, shows at a glance the latitude of color film and indicates whether or not the film can handle the subject's range of brightness. These are features for the critical user.

For the casual picture taker, there are also meters with special features. For example, meters without calculators (see below); meters designed for specific cameras, as well as meters which are built into the camera (see page 111). Each one of these types has special virtues, which are fine if you need them. However, if your needs and meter don't match, they are just a nuisance.

25



ARE YOU A BEGINNER?

It's a fact that beginners and casual picture takers, who most need the help of a meter, are easily frightened away by the complexities of the wide range, top quality instruments. And, they usually do not need a meter of the extraordinary capabilities of the Weston Master or big Norwood Director.

For such picture takers, the direct reading meters may be helpful. The Weston DR (*photo 25*) works by reflected light; the Norwood Director M-3 by incident light (*photo 26*). Such meters are small, light, and have a moderate range of sensitivity.

(Continued on page 111)

26





Front light? Special methods. p. 55



When to use tungsten ratings outdoors? p. 67



Try a controlled silhouette! p. 57



Can you use sidelight? p. 59

Sun vs. shade? p. 64

HOW TO

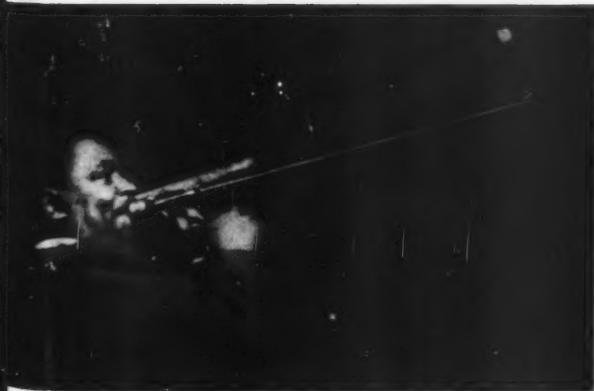


**ALWAYS GET EXACT EXPOSURE?
IF NOT, STUDY THESE
16 PAGES TO LEARN EXPERT
METHODS FOR BLACK-AND-WHITE
EXPOSURE IN 22 SITUATIONS.**



Which area to favor? p. 60

USE YOUR METER



Dim lighting? What to do? p. 62

Want to get the most out of your exposure meter? You need to know more about light itself. Every time you shift camera position, illumination appears to fall differently on the subject. And the proper method of taking a reading for one lighting set-up may not do for the next. To help you use your meter correctly at all times, we've assembled on these 16 pages just about every type of light-

ing you may encounter. With each picture you'll find complete instructions for using either a reflected light or incident light meter. And where one kind is more satisfactory than the other, we tell you. That's so you'll know when you should use the reflected light or incident attachment available for many meters. Under some conditions an incident meter is better than a reflected light type, and vice-versa. So it's useful to have the right attachment with you at all times.

Now to using your meter. Naturally a great deal depends on what you want to record in a scene. For any subject there can be many "correct" exposures, each conveying a different mood. Here is all the basic information you'll need to get the exposure you want.

As a further help in assuring "correct" exposure, we've assembled an exposure package containing: complete ASA and Weston film ratings, plus the meter test target described on page 45. To get this material free, just write to: Exposure Meter Editor, MODERN PHOTOGRAPHY, 33 West 60 Street, New York 23, N. Y.

Into the light? p. 57





**FRONT-LIGHTED PICTURE?
SUBJECT DISTANCE
DICTATES THE TECHNIQUE.**

MEDIUM DISTANCE. As in all the pictures on these two pages, the illumination isn't necessarily right behind you. Sometimes it's more over one shoulder or the other, casting some interesting shadows. In many medium distance shots you'll want to catch natural action without disturbing your subject. About the easiest way to do this with your reflectance meter, as in the picture *above* by Andre de Dienes, is to take a substitute reading. Hold your hand so it's lighted like the subject's skin. Take your reading as close to the hand as possible without casting a shadow on it. This method works for distant scenes, as well. (And it's more accurate than pointing your meter down at a 45-degree angle to eliminate light from the sky.) Correct exposure is much simpler in this case with an incident light meter. Hold the meter at arm's length from near camera position and point cell at camera. For distant shots with shadow areas illuminated by haze, close down one full stop.

IS YOUR SUBJECT CLOSEUP? Is the light source over your shoulder? Either a reflectance or incident type meter will give you good exposure results, easy to calculate. Just follow these steps. With a reflected light meter take a reading about six inches from the face (or the most important light area) *without casting a shadow*. Use the same technique for all basically front-lighted pictures—whether the light source is the sun (as in Andre de Dienes' picture, right), flood light (as in Burt Owen's picture, right, below, or even window light (see Leonard Balish's cat picture, below). If your scene includes important dark tones, such as clothes, and you want more detail in these areas, just open up one stop more than is indicated on your meter. If you're using an incident light meter, walk over to your front-lighted subject. Hold the meter at arm's length and point its sensitive cell directly towards the position of the camera when you're shooting the picture. Use the reading indicated on your meter (and pick the f/stop-shutter speed combination which you prefer). This incident reading will give you a full exposure with most closeup subjects.







SHOOTING INTO THE LIGHT? FOR MOOD PORTRAITS OR SILHOUETTES, USE THESE EXPOSURE TECHNIQUES.

PORTRAITS against the light often have a dark, somber mood. But that was just the effect Bob Willoughby wanted to convey with his picture, *left*, of actor James Mason as Oedipus. We recommend the incident light type meter for this kind of picture. Why? Because stray direct light almost always affects the cell of the reflected light meter when you make readings for the shadow side of the face. And the main point is to get the correct exposure for facial detail. Here's a pitfall for reflectance meter owners—so add your incident attachment and proceed as follows: to obtain a reading that is on the full side, walk over to your subject and point the cell at your camera position from the center of the face. For less shadow detail as in picture at *left*, close down one or two stops. Part of this picture's impact comes from setting a dark face against a brilliant, overexposed background.

SILHOUETTES are easy if your subject is between the camera and the sun. Either type meter is suitable. For a full silhouette point your incident meter from the subject towards the sun. Naturally, if illumination is the same at camera position, you can point the cell at the sun from there. If you prefer a semi-silhouetted picture like Harold Feinstein's *above*, open up one stop. The sky behind the subject is the place to aim your reflectance meter. Be careful, however, to avoid the part of the sky where the sun is coming through, unless it is obscured by clouds. Again, *to obtain a semi-silhouette picture, open up one stop.*

INTO THE LIGHT, *cont'd.*

AGAINST WINDOW LIGHT. The problems are similar to those described in against the light portraiture (page 57). And for situations like the one Ted Russell photographed, *right*, an incident meter will give you more accurate readings. If you want to shoot for highlights only, letting shadows go black, as Russell did, point the incident meter cell at the window light itself, from camera position. For full leg detail use the standard incident position, holding the meter at the subject, and then pointing the cell back towards the camera.



DISTANT BACKLIT VIEWS are tricky if you're using a reflectance type meter. As you point the cell towards a street like the one in Shirley Burden's picture, *below*, the sun's rays swing your meter needle far too high for shadow detail in your picture. That's why we recommend an incident meter for accurate readings. First hold the meter at arm's length with the cell pointing back towards the camera. This reading will give you *full* shadow detail, but closing down one or two stops will give you less, as *below*. To stress highlights only and silhouette all objects, point cell directly towards the light.





FOR SIDELIGHTING YOU HAVE THREE CHOICES.

A SIDELIT PORTRAIT often calls for detail in both shadow and highlight face areas. (See Andre de Dienes' shot, *left*). The easiest way to get this compromise reading is to use an incident meter in the standard center-of-the-face position (*see page 57*). Then the meter automatically gives an average of all the light falling on the face. To get an accurate average of reflected light, *you* have to do the averaging. This means taking two closeup skin readings—one of the shadows, the other of highlights, and setting the calculator arrow on your reflectance meter midway between them. But there are other possible exposures, each "correct" in its own way. And here either meter is easy to use. Want to expose for highlights and let shadows print dark? Use the "highlight" reflectance reading, or hold incident meter at highlight side of face, pointing cell back towards the camera. Need full shadow detail, but little detail in highlights? Shoot according to the "shadow" reflectance reading, or take an incident meter reading of the face shadow only.

FOR DISTANT VIEWS try sidelight as in George Cserra's picture, *right*. It's particularly good for buildings when you want to emphasize their form and solidity by showing planes as separate contrasting shades of gray. And the play of highlight and shadow will also add depth and life to almost all your landscapes or architectural photographs. Exposure is simple with either type of meter. With a reflectance meter use the substitute technique described on *page 54*—but don't hold your hand so it's front lighted. Instead make sure it is illuminated like your sidelighted subject. If you're using an incident meter, hold it at arm's length, and aim the cell back so it points halfway between the camera and the sun. Either reading will give you good shadow detail. However, if you want more, just open up one stop more than the meter reading indicates.





MIDDLE TONES CAN BE MOST IMPORTANT, as in the bullfight scene, *above*. Photographer Kit Robbins saw three possible areas of interest: the spectators in the background, the dark bull, and the matador halfway between them in tone. Because the bull would still look menacing underexposed, and an overexposed crowd would contribute to atmosphere, she decided to concentrate on the matador. Here's where an incident light meter would be easy to use *if* the photographer were in the same light as the bullfighter. Otherwise you'd need your reflectance attachment. Using this you could point the meter down at the ring to cut out sunlight. But for a more accurate reading take a substitute reading of the palm of your hand, held in the same kind of light as the subject.

HIGHLIGHT? SHADOW? IN-BETWEEN? SHOOT FOR SUBJECT.

DARK TONES IMPORTANT?

Want to preserve them because they form the essential part of your scene? In Leonard Balish's picture, *right*, the main subject is the old Mexican woman. She's mostly in shadow, protected from the direct sunlight illuminating the background. To reproduce full shadow detail and get unposed action with a reflectance meter take a substitute reading from your hand. Use the techniques on page 54, but *make sure* your hand is in the same kind of shadow as the subject. Incident meter owners who prefer not to point the cell from subject to camera can use this method in even shade: Hold meter in an area illuminated just like the face, and point the sensitive cell towards the camera's shooting position. When a subject is dark like this one, in addition to being in the shade, open up one stop. Either type of meter is equally suitable in such a case.



NEED TO STRESS LIGHT TONES

to create a mood? No average reading would take into account the fact that the tiny highlight face area is the most important section in Mary Schlivek's picture, *left*. To maintain highlight detail and a candid quality, again use the substitute method described on page 54. The candid approach can also be retained using an incident meter if light on the child's face and at camera position are the same. Stay at camera position facing subject. Now hold the meter vertically, and aim cell at horizon line over your shoulder. If your subject is sidelighted aim at horizon, but point cell midway between camera and sun. To reduce shadow detail further with either meter, close down one stop.



WHAT CAN YOU DO WHEN THE LIGHT IS LOW? HERE ARE THREE ANSWERS.

VERY LOW LIGHT. When a single light is the main source of illumination, as in Leonard Balish's picture of a musician, *below*, try the standard incident reading method, or the closeup reflectance technique (both described on page 55). Suppose that you can't get a useful reflectance reading from your subject's skin tones? You can still use this meter. Just point the cell directly towards the light *from near subject position*. Now multiply the exposure by 20. How does this work? If the meter reads 1/20 second at f/3.5 when the sensitive cell is aimed into the light you should multiply that 1/20 second by 20, and shoot at 1 second and f/3.5. When contrast is high, as *below*, the shadows will, of course, go black on your print. With a normal contrast subject (illuminated perhaps by a single dim overhead bulb) you'll get fuller, nearly normal exposure for shadow areas. Don't try this with your incident meter. There's no accurate way of boosting the incident reading.

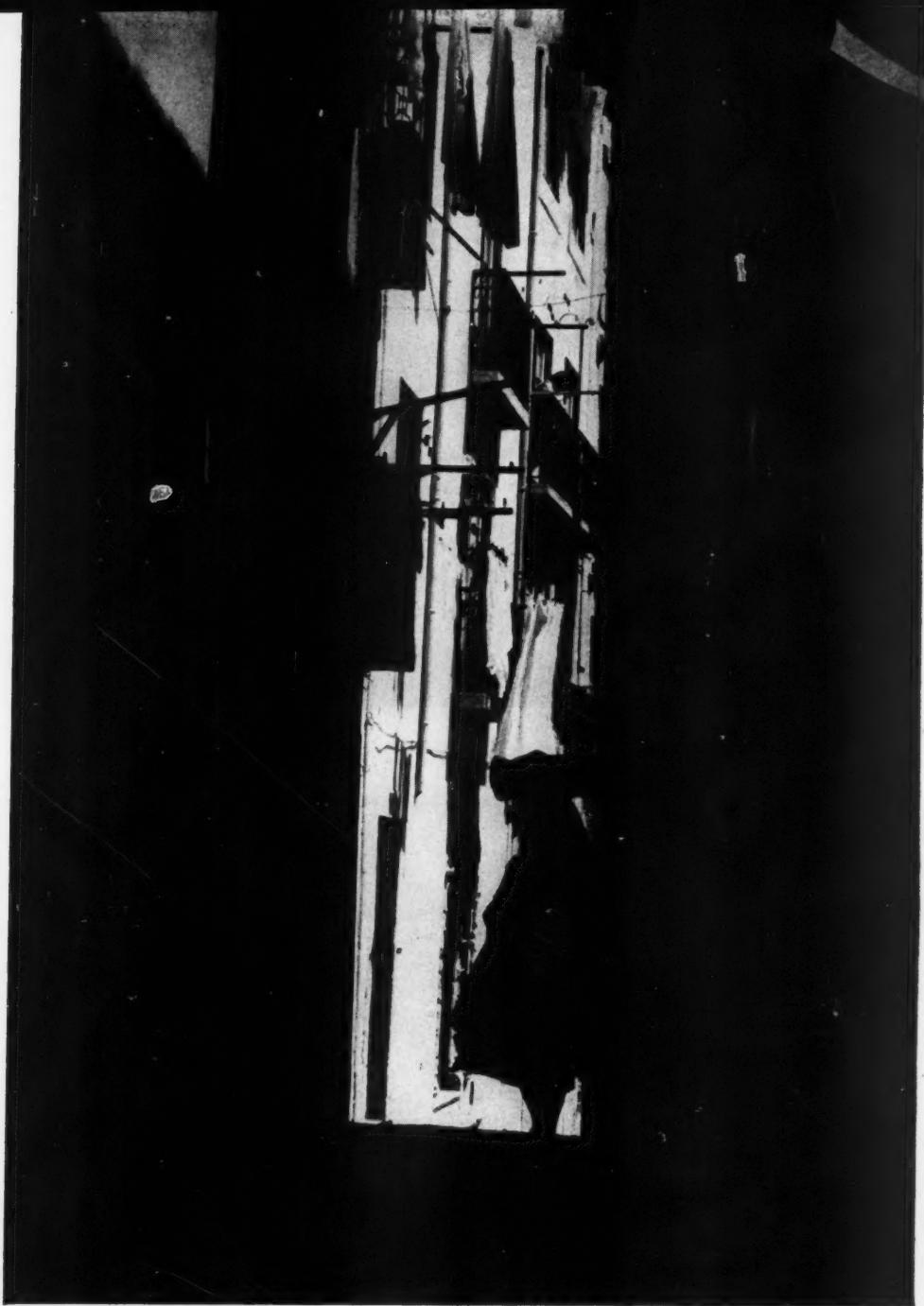
IN DIM ROOM LIGHTING, see Harold Feinstein's shot of gossips, *right*, either meter can be used. You should have no trouble with your incident type meter here, because incident light is always more intense than light reflecting from a surface. Try the standard method (page 55), or, if the room light is even, the similar-illumination technique (*top page 61*). When you're not sure of your reflectance reading, here's a solution: First divide your exposure index by 5 (for a tungsten film rating of 100 set your meter at 20). Then take a reflected reading from a white card or even from a white handkerchief. This will give you a full and accurate reading for the facial tones.





LARGE AREAS INDOORS

often need maximum depth of field, but less than average shadow detail. Harold Feinstein's shot of a concert hall, *left*, shows such a situation. It calls for the minimum exposure technique which can only be used accurately with a reflectance-type meter. Here's where the "U" marking on a Weston meter comes in handy. Simply take a reading four inches from the darkest part of your subject (or a nearby equivalent tone). Then set the "U" marking at that point instead of the calculator arrow. With other reflectance meters use the same four-inch cell positioning method, but divide the darkest area exposure by 10. A dark area exposure of 1/5 sec. at f/3.5 would become 1/50 at f/3.5—your shooting exposure. If you multiply the film index by 10 instead, you'll get exactly the same exposure results.

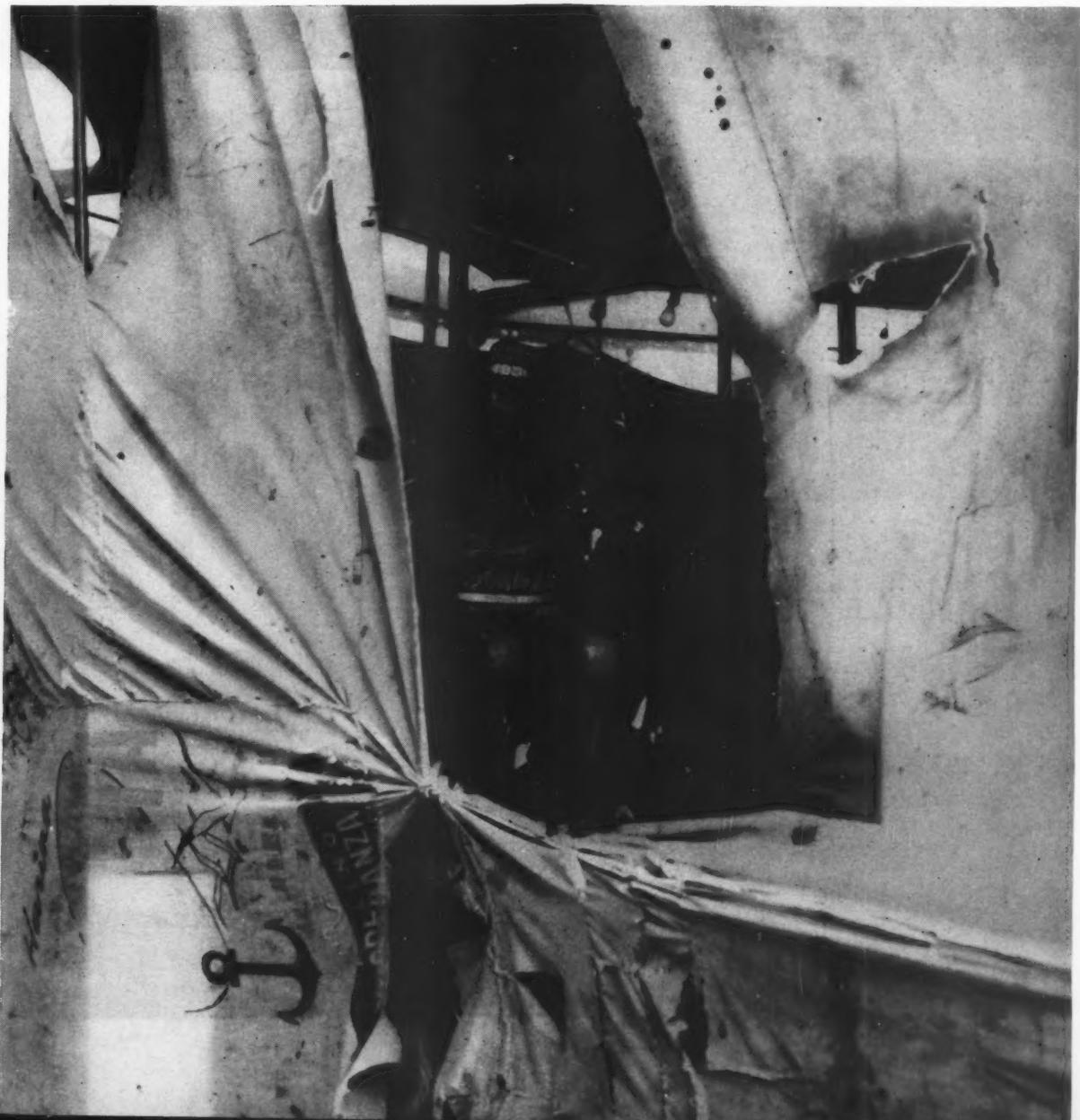


SHOOTING SHADE TO SUN PICTURES?

Which area is most important? The sunlit one (John Rogers' shot, *left*), the shaded section (*see page 61*), or part of each (Ormond Gigli's picture, *above*). For either situation shown here, point your reflectance meter at subject so it takes in about equal parts of sun and shadow. For light areas only, with an incident meter, point the cell from in front of subject (*left*), or from sunny area (*above*) towards darker camera position. Open up one stop for some shadow detail as *above*. Here we recommend the reflectance meter for shots including people. It can be used more rapidly.

WHAT TO DO WHEN YOU CAN'T GET WHOLE TONE RANGE?

SUN TO SHADE. If your important area is in shadow but you're in bright light, it takes time to use either meter correctly. No reading with a reflectance meter used from camera position could give Leonard Balish the proper exposure for the interior of the tent, *below*. To have these shadows print brilliantly he needed to walk over to the tent, take a reading from a medium-toned subject in shadow (here the horse), and expose for this. The sunlit canvas is, of course, overexposed. Now to using an incident meter. If your subject is stationary, as was Balish's, there's plenty of time to place the meter in the shadow area (inside the tent), take a reading pointing the cell towards the camera position—then go back to the camera and make the photograph. Here, either type of meter can be used.



SUNSET, REFLECTION, WATER: THREE TRICKY SITUATIONS.

NEAR WATER you may get inflated readings with your reflectance meter. That's because the surface of the water (see Leonard Balish's shot at *right*) often reflects the sun towards the meter. For full shadow detail with a reflectance type meter take a substitute reading from your hand (*see page 54*) but *make sure* your hand is lighted like the object in which you want detail (here the pigeon). An incident meter will give you "normal" shadow detail when used the standard way (*see page 55*). For very dark subjects just open up one full stop, for light ones close down one full lens stop.



OUTDOOR REFLECTIONS

can sometimes be puzzling if you're using a reflectance type meter. But here's a technique you can use: Hold your hand in front of the reflecting surface and take a reading from it. In Werner Bischof's picture, *right*, this type of calculation would have given him the proper exposure for the building in the reflection, a subject with average middle tones. With an incident meter, simply point the cell from near the reflecting surface towards the camera. With either meter, if your subject is darker than average give one stop more exposure—if it's lighter, open up one full stop more than the meter reading shows. This will vary exposure just enough to take care of many other outdoor reflection scenes which you may want to shoot.



AT SUNRISE AND SUNSET that striking reddish glow in the sky also lights the objects you want to photograph. Since the reddish content of the light is actually similar to tungsten illumination, set your reflectance or incident meter to the tungsten rating for your film—not to the daylight ratings. In Harold Feinstein's beach picture, *left*, made late in the day, a bonfire in the foreground heightened the reddish quality of the light. If he had used a daylight film rating the picture might have been underexposed, with consequent loss in shadow detail.

SPECIAL PROBLEM: WHICH EXPOSURE FOR LANDSCAPES?

COLOR EXPOSURE must be accurate. An error of one stop one way or the other, which might be unnoticeable in a black-and-white negative, may completely alter the effect of a color transparency. In addition, once an error in exposure is made, there is little that can be done to correct it.

An exposure meter is essential for obtaining consistently correct exposures. If the scene has flat, over-all illumination, there should be little problem in finding the correct exposure. But such lighting tends to produce dull, uninteresting results. Usually, your scene will have varied light intensities, with highlights, shadows and middle tones. But the nature of color film will seldom allow all these intensities to register equally well. Film manufacturers advise that the brightness of the highlight areas should be no more than three times that of the shadow areas if you want maximum color and detail in the entire tonal range of a color print. If your main interest is in projecting your color slides, however, the highlight areas can be a little brighter than three times the shadow area. If you use an extended brightness-shadow ratio, better underexpose the shadows than overexpose the highlights since you can always force projected light through a moderately dense area of a transparency. If you overexpose, the color will be washed out and will look worse when projected.

Unfortunately, outdoor highlight areas are often ten to fifteen times as bright as the shadow areas. Sometimes the ratio can even go as high as 100 to 1. How can you handle it? Here are five different

situations where the photographer found extremes in light variation, yet was able to obtain a satisfactory picture. Each represents a problem which you are likely to meet.

1. Irregularly illuminated colorful scene.

When you expose color film under poor lighting conditions, you must learn to make compromises. Since color film can seldom record all areas of an irregularly lit scene properly, you as the photographer should decide which parts of the picture are the most important to preserve faithfully, with detail.

Peter Greene had to make his choice when photographing this scene in Monument Valley, Arizona. Between storms, the sky was heavily overcast in spots, lighter in others and clear in the distance. The immediate foreground was more adequately lit than the background. Greene decided that he would try to retain the detail in the foreground and silhouette the monuments in the distance against the sky. He took a reading with a reflecting-type meter on one of the rocks in the foreground and exposed 1 sec. at f/22 on Ektachrome, according to the reading. Had he calculated for the background, the foreground would have been overexposed and washed out in color.

2. Silhouetted figures against daylight.

A patterned silhouette transparency such as this by Bill Mitchell can be quite effective. When calculating exposure disregard that part of your subject which will appear in silhouette. The less light falling on the silhouetted subject the better. Your silhouette subjects should generally be in the near foreground, between the camera and a more brightly lit background. If you're working from an exposure chart, set your camera for the

1. Detailed, colorful scene illuminated irregularly by low, overcast sky.



2. Silhouetted figures against daylight.

3. Sunlight on bright reflecting surface.

5 Problems (cont.)

4. Sunset scene changes intensity and color constantly.



5. Two important areas of interest have different light levels.



brightly lit areas in the scene. If you have an exposure meter, determine your exposure for the amount of light falling on the bright areas only. Sometimes, if the ratio of light between your foreground subjects and the background isn't too great, you may pick up a bit of interesting shadow detail in the silhouetted figures. Bill Mitchell made his silhouette shot from inside a Quonset hut. According to the guide that came with the Kodachrome, proper exposure for the bright exterior was f/5.6 at 1/50 sec. However, Mitchell wasn't sure so slow a speed would stop all movements of the construction workers in the foreground, so he doubled the speed of his Contax II to 1/100 sec. and opened his Sonnar f/2 lens up one full stop to f/4, thus preserving the exposure relationship.

3. Sunlight on bright reflecting surface.

Beach scenes, snowscapes, sand or desert flats—all can make excellent color picture material. But estimating exposure can be tricky. The light-colored reflecting surface tends to make the reflecting-type meter read high, underexposing, and muddying the color in middle tones and shadows. This problem is a very real one for Esther Henderson who takes many pictures in the southwest under difficult light conditions. At White Sands, New Mexico, where the picture, page 69, was made, the needle of her exposure meter reads extremely high in bright sunlight (from 800 to 1600 with a Weston Master II). She knows from experience that, if she follows such a reading, a transparency with underexposed shadow detail will result. Exposure must be lengthened, but how much? She increases about 2/3 of a stop over the meter's indicated reading. For example, instead of shooting at the calculated meter reading of f/11 and 1/100, she uses f/11 at 1/60. With your own equipment, however, you may find that a full stop may suit your own needs more adequately. When you have a chance, under the proper conditions, try bracketing your exposures. Make one at the meter setting, one 2/3 stop over, and one a full stop. By comparing transparencies after processing, you'll have a good guide to use for future color work. If you have an incident light exposure meter, your problem will be the opposite. Because the incident-type meter was designed for subjects of average color and reflectance, and the meter is reading the light falling on the subject rather than the light reflected from it, allow up to one full stop less exposure than the meter indicates.

4. Sunset scene changes constantly.

There are basically two types of sunset pictures. First, there's the transparency in which the sunset is the main theme. Often, trees or buildings are used in silhouette to accent the picture. The second features the colors of the sunset as an added attraction to the already present subject material. Bill Mitchell made this second type of picture one evening while stationed in Korea. He noted a faint orange glow in the sky in the late afternoon. Perhaps the orange would become stronger and make an interesting sunset picture. Mitchell walked along a river, watching the sky grow darker and the orange predominate more. A Korean boat floated by, silhouetted

against the reflecting water. What would be the proper exposure? Mitchell, who didn't own a meter, has found that a setting of about f/11 at 1/25 sec. is reliable with Kodachrome in a bright sunset, although he feels that this produces a slight underexposure. However, he advises that it's safer to underexpose and thereby get a deeper hue than it is to overexpose and chance washing out of the colors.

A meter reading, of course, is far more reliable than guessing and a reflecting-type meter will prove easier to use in this case than an incident meter. If you're primarily interested in the color of the sky and plan to silhouette the foreground or frame area, take a reading of that portion of the sky which will appear in your picture. Don't point the meter into the sun, however, unless the sun is behind clouds. And, if you want the color slightly darker than you see it, underexpose a half to a full stop.

5. Areas with different light levels.

Is there one proper exposure at all times? Not according to the experiences of Bill Mitchell who made the photograph of the fog rolling over the Korean landscape. Sometimes three different exposures can give you three entirely different but equally acceptable pictures.

When there are two or more areas of interest at different light levels, changes in exposure can highlight one and subdue the other—or can make them appear equally important. Mitchell made three exposures on Kodachrome at 1/50 sec: one at f/11, one at f/8, and one at f/5.6. The f/8 exposure, shown here, retains detail in the middle foreground but slightly overexposes the fog. The f/11 slide makes the scene more dramatic with heavier fog and an almost completely silhouetted foreground. The f/5.6 transparency shows a detailed landscape with fluffy, cotton-like fog.

Even when you're working with an exposure meter, it's still a good idea to make some bracketing exposures. If you take a reflected reading, make one exposure for the important highlight level area. Then take another reading and shoot for the area with less light. Round out the series with a compromise exposure. With an incident light meter, which always reads for subjects of average tonal value, shoot a picture one stop greater than indicated and another one stop less.

Unfortunately, you may not always have the time or film for three separate exposures, and one will have to be enough. In this case, analyze your scene carefully and try to visualize things as your color film will reproduce them. Check the shadow area, or parts of the scene with low light intensity, to see if losing detail in them would really affect the feeling which you want to convey in the picture. If the loss of detail seems unimportant, expose for the more highly lit area of importance. If the loss of detail does effect the scene, the final exposure will have to be a compromise in order to hold the detail in the darker areas. Learn to analyze a scene in terms of what your color film can see. Your final results will come much closer to what you originally liked in a subject and wanted to show in your final picture.

THE END

PICTURE ENEMY NO. 1: BAD EXPOSURE

If you're content with poor print quality, don't bother
to read this by Wolf F. Berg, D. Sc., Ph. D., F. R. P. S.

WHEN YOU CONSIDER the success of the box camera which produces satisfactory pictures from a wide range of subjects and at various weather conditions throughout the year you may well wonder why anyone should concern himself with the problem of "the correct exposure." Most modern photographic materials possess so wide a latitude of exposure that results good enough for the album are obtained merely by pressing the button. This is true for all black-and-white materials and the negative-positive color processes but not, of course, with reversal films and in particular, with color films giving a positive transparency. For these latter, it is well recognized that under any one set of conditions, only one camera exposure will give the best possible result. We will not concern ourselves with the problem of exposure of reversal materials here. Our main purpose is to demonstrate that even for a photographic process which has considerable exposure latitude, it is well worthwhile paying attention to the exposure problem if quality pictures are desired.

The film speed criterion

In the course of research which has taken many years to complete, L. A. Jones and his collaborators at the Research Laboratories of the Eastman Kodak Co. have established a "speed criterion" which correlates the characteristic curve of the negative material with the minimum exposure required to get an excellent print. We need not concern ourselves with details of this except to note that the results of this work are the basis for the ASA Exposure Index which is utilized in virtually all present-day American exposure meters, charts, and tables.

The exposures resulting from using the ASA recommendations are, however, heavier than would result from the direct application of the Jones speed criterion. There are several very good reasons for this, and one of the most important is as follows. The ASA exposure recommendations contain a safety factor which has been introduced simply because a somewhat over-exposed negative is perfectly useful, whereas an under-exposed negative may be a complete loss. The safety factor therefore takes care of, for example, variations in shutter speed of the camera, wrong estimates of the illumination conditions,

etc. and ensures a larger number of useful negatives than would result from a straight injudicious application of the minimum-exposure criterion. The use of the safety factor, on the other hand, means that many negatives receive a heavier exposure than necessary, to the detriment of quality of the print.

The Jones criterion was derived from the point of view of getting in the print excellent reproduction of the tones in the original scene. Quality of tone is, however, not the only aspect of print quality; there is also resolving power and graininess, both of which become very important when we think of an exhibition print. As we shall see, these properties are dependent on the fact that the light-sensitive grains in the photographic emulsion are distributed at random in the depth and width of the coated layer.

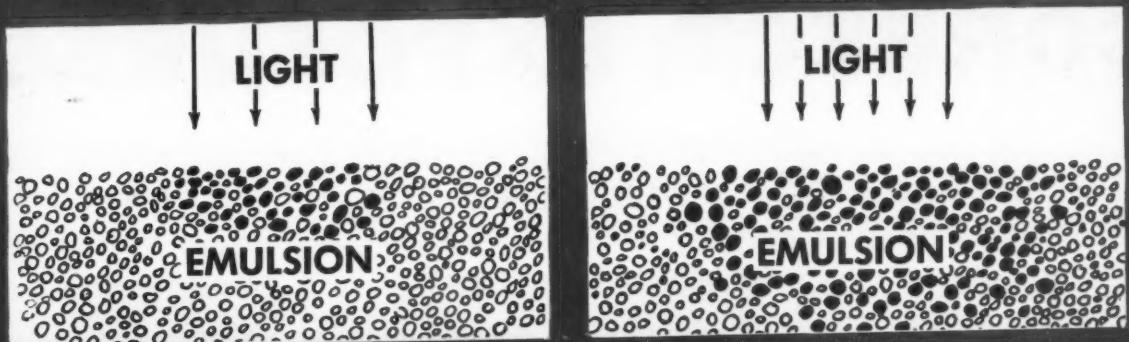
Effect of the scatter of light

When light hits any surface which is not perfectly smooth, it will be deflected from its original direction in a more or less irregular manner; it is scattered. Even the smoothest surface, such as that of a camera lens, scatters some of the light since it is impossible to keep it perfectly clean. The surface of a photographic emulsion layer scatters light strongly and some of this light reaches various parts of the interior of the camera, being eventually scattered back onto the emulsion.

Repeated reflection of light on the various internal surfaces of the camera lens, and light scattered by the lens mount, all collaborate with the general light scatter in the film and camera to cause light to reach parts of the negative which would otherwise receive very little light indeed. The result is two-fold. One, the effective range of tones in the subject is reduced: a part in the scene which is very dark will be recorded in the negative as if it were less dark. It can be shown that this often results in an increase in effective speed of the photographic material.

Second, and this is the much more important point of view here, the scattering of light into regions where it does not belong leads to a loss of resolution, since it reduces the contrast or, in other words, the difference between the light and the dark (*Continued on page 112*)

This Chart Shows You Why Overexposure Ruins Print Quality



IN THEORY: What happens when light strikes a film emulsion may be compared to rain falling on sand. At first, only the surface of the sand gets wet, and the spots will be the size of the rain drops. As rain continues, the water goes further into the depth of the sand and the spots spread sideways. A correctly exposed negative records sharp images (block grains) close to the surface of the emulsion (left). As exposure is increased, the image goes deeper into the emulsion and spreads out (right).



IN LABORATORY TESTS: The theory can be demonstrated in the laboratory by making negatives of resolution charts and enlarging prints. The negative from which the left picture was made was correctly exposed; the right print was made from a heavily overexposed negative, and it shows



IN PICTURE TAKING: The effect of overexposure is less obvious in the average print because enlargement of a test chart. Few subjects are as sharp-edged or as contrasty as a test chart, and most photographers enlarge only a few diameters or may be satisfied with contact prints. However, if you have a subject full of fine detail, and if you are striving for a big, beautiful print, overexposure will degrade the contrast and detail. At left is a 20X enlargement of a small area from a correctly exposed negative. Compare it with the result of heavy overexposure in the right print.

USE THIS PICTURE CHART TO GET

CORRECT EXPOSURES

DARK SUBJECTS

Dark areas predominate in the scene. People in dark clothing; dark foliage or buildings usually can be treated as dark subjects. Note: subjects are in open shade when they are shaded from direct sun, but exposed to a wide angle of open sky.

Bright Sun



Hazy Sun



f/8

f/5.6

AVERAGE SUBJECTS

When there are light and dark areas in about equal proportions, you have an average subject. Nearby people, gardens, houses, unshaded scenes generally are in this category. See footnote on the *opposite page* for recommended shutter speeds.



f/11



f/8

LIGHT SUBJECTS

Light-colored objects dominate the scene. Distant scenery such as mountains, nearby people in surroundings that reflect a lot of light (beach, light buildings, sails, etc.) are generally considered to be light subjects. Photo credits are on page 130.



f/16



f/11

WITHOUT A METER...

Cloudy Bright



f/4 or f/4.5

Cloudy Dull



f/2.8 or f/3.5

Open Shade



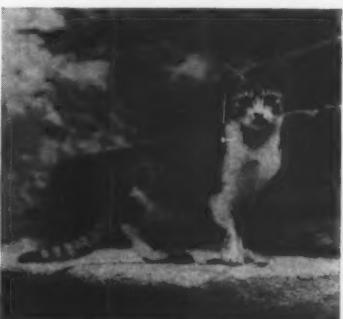
f/2.8 or f/3.5



f/5.6



f/4 or f/4.5



f/4 or f/4.5



f/8



f/5.6



f/5.6

With medium speed films such as Kodak Plus-X, Ansco Supreme or All-Weather Pan, use a shutter speed of 1/50. With faster films such as Kodak Super-XX or Ansco Superpan Press, use the next smallest lens opening or set shutter to 1/100.



DISCOVERY

no. 6

LEONARD SCHUGAR

The good photograph shares a story, a mood

Often pictures speak overwhelmingly for themselves. These do. Therefore it is wise to avoid a costume of descriptive words. But just for the record, the photographer is a young man who is engaged in public relations photography for Westinghouse Electric in Pittsburgh, Pa. Previously he has done theatrical photography, was a police photographer for the Army, and later a free-lance correspondent-photographer. Schugar uses a wide variety of cameras, but since he works mostly with small films, he describes himself as a purist by necessity. Strict controls are a must, and he rarely departs from them. "I do not believe a bad photo can be made good by the expedient of reticulating the negative or printing through a screen," states Schugar who goes on to define a good photograph as one which is well suited to its purpose. One of his favorite purposes is to use photography to share experiences, moods, or visual stories. You can see—in these pictures—exactly what he means.—D. J.

Early evening landscape (left); children of Marrakech, French Morocco, North Africa (below). Both were made with Rolleiflex and Super-XX. No exposure data.



MODERN TESTS TWO NEW STEREO CAMERAS

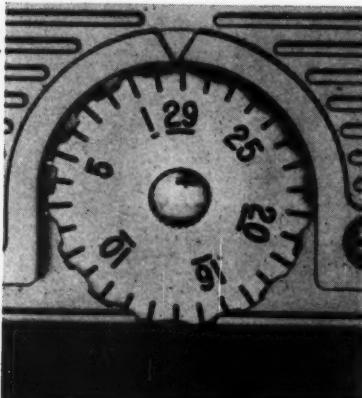


With fixed-focus f/3.5 lenses, a single shutter speed, the Universal Stere-All is an attempt to simplify 3-D.

\$50 STERÉ-ALL 3-D FEATURES SIMPLICITY



Aperture wheel is located between two lenses, controls depth of field.



Frame counter, atop camera, is very legible, indicates shots remaining.

How practical is a stereo camera with fixed-focus lenses and a shutter with but a single speed? Does this arrangement simplify things for the photographer or tie his hands to the point where good work is impossible? The Stere-All is one of the least expensive of all the 3-D cameras containing the 23 x 24mm format. The two, three-element 35mm f/3.5 Tricor lenses are fixed-focus, but they have iris diaphragms and stop down to f/16. Since the camera lenses can't be focused, there's no need for a rangefinder. The lenses are so set, however, that you can shoot pictures as follows: at f/3.5, from 8 to 25 ft.; at f/4.5, from 7½ to 35 ft.; at f/5.6, from 7 to 50 ft.; at f/8, from 6 ft. to infinity; and at f/16, from 4½ ft. to infinity.

The shutter, which is cocked when the film is wound, has one speed, about 1/50 sec. (It's synchronized for type M bulbs and electronic flash.) Exposures must be varied by changing the lens openings.

The optical finder, located at the top of the camera, shows an extremely clear image. There is no parallax compensation. However, with the limited camera-to-subject distances at which you can

shoot, this shouldn't cause too much trouble. The entire camera-back can be removed for loading.

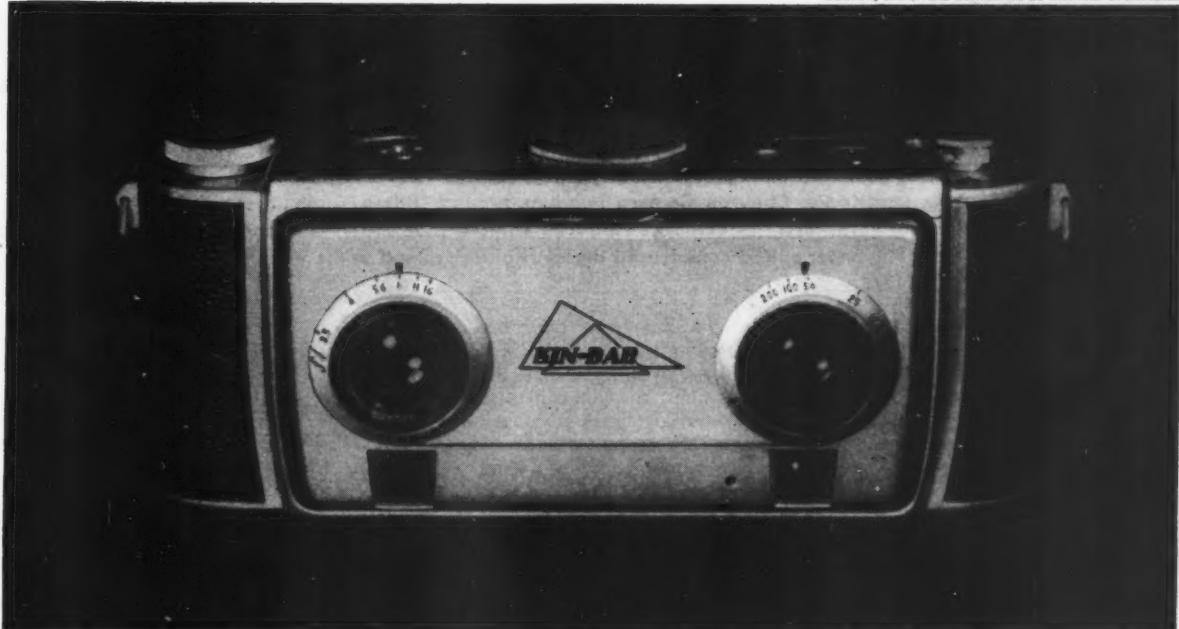
Just how well does such a camera system operate as compared to instruments not having these limitations?

The Stere-All proved amazingly versatile. Practically all stereo work today is done on slow color film. Consequently, a vast majority of pictures are shot at speeds no faster than 1/50 sec., approximately the speed of the Stere-All's shutter. This shutter speed will limit the photographer only in making pictures of moving objects.

The fixed depth of field limits, caused by the fixed-focus lens, would seem more of a problem. At f/8 or f/16, with everything in focus from 4½ or 6 ft. to infinity, there isn't too much difficulty with scenic shots. With portraits, however, where you would want to approach as close as 4½ ft., you are limited unless the lighting is just right for exposures of f/16 at 1/50 sec.

In low light intensities, the problem becomes more acute. You cannot make distant objects sharp, a serious blow to all scenes since the background must have detail for best stereo results.

(Continued on page 119)



Can the Kin-Dar successfully incorporate the features of higher-priced stereo cameras and still sell for \$100?

\$100 KIN-DAR HAS COUPLED RANGEFINDER

The Kin-Dar is quite a stereo camera. The number of features the manufacturers claimed to pack into it for under \$100 seemed truly amazing: f/3.5 Steinheil lenses, shutter speeds from 1/10 to 1/200 sec., plus the only combined single window rangefinder and viewfinder available in a camera of this type. The features were there. How well did they work? We saw several "test" Kin-Dar cameras. But we waited for a production-run model.

The camera is quite small—perhaps the smallest of all the 23 x 24mm jobs. It's also light (18 oz.)—made of die-cast aluminum. Winding the film cocks the shutter. The shutter release, on the top left-hand side of the camera, is one of the most quiet and gentle releases on any camera we've ever tested. The rangefinder-viewfinder window is located on the bottom left of the back of the camera. Turning a large milled wheel atop the camera body causes the entire front plate of the camera to move outwards, changing the focus. The viewfinder frame is quite sharp, the picture bright. The secondary superimposed yellow rangefinder image is also bright and can be merged easily with the primary image for proper focus. The focusing

range is from 2 1/2 ft. to infinity. Flash exposures for Nos. 5 and 25 bulbs as well as SM and SF lamps are printed in red on the milled wheel.

The sync. outlet atop the camera is designed specially for the Kin-Dar flash unit, but you can get an adapter which allows you to use a Compur or ASA connecting cord.

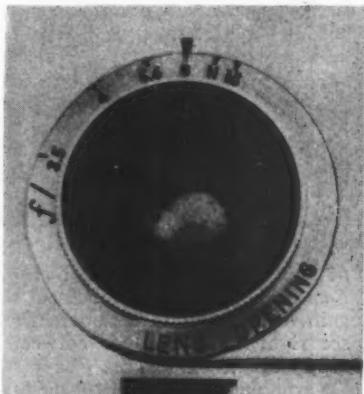
The instructions didn't specify the speeds for using electronic flash, but tests showed that it worked at all speeds.

The two 35mm f/3.5 Steinheil Casuar lenses are controlled by a click-stop ring around the right lens. The shutter speed ring surrounds the other lens. The 1/50 sec. speed for average color work is marked in red. The shutter is quite novel—the same blades also serve to alter the diaphragm opening.

The back of the Kin-Dar can be removed entirely for loading. There's a fine folding rewind handle which really cuts down your reloading time.

We liked the camera. The lenses were good, the shutter accurate and the camera easy to handle. We did find one fault. Although focusing with the milled wheel was easy for a right-eyed person, left-eyed camera users found that their

(Continued on page 119)



Kin-Dar shutter leaves also serve as diaphragm openings, have click stops.



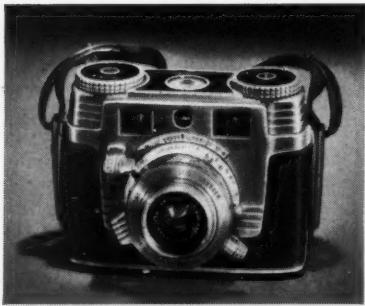
Focusing wheel atop camera has depth of field indicator, flash information.

Seasonal Signs &

—and an ingenious way of keeping focal harmony in three dimensions... how the Kodak Chevron Camera behaves around Ultima Thule... the right filters for Type F (for flash) Ektachrome Film... a camera that shoots 3000 pictures a second to make better puffed cereals and diesel engines... and prints you can wash with soap

Seasonal stirrings

This is about the time of year when bookish people stop quoting Chaucer's remarks about Aprille showers, and begin singing "Sumer is icumen in." Now the young photographer's fancy lightly turns to thoughts of white sailboats against a rich red-filtered sky (*Kodak Wratten A Filter*, \$1.75 in Series IV, \$1.95 in Series V, \$2.25 in Series VI; or a red *Kodak Pictorial Filter* for even less). You dab a drop of *Kodak Lens Cleaner* (1-oz. bottle, 40 cents) on the gleaming



f/3.5 Ektar eye of your Kodak Signet 35 Camera (now the most sensational bargain in the miniature-camera field; see right). You hesitate between a supply of fine-grain *Kodak Plus-X Film* (36-exposure magazine, \$1.10) and high-speed, full-color *Kodak Ektachrome Film E135* (20-exposure magazine, \$1.85), and finally wisely fill your pockets with both. With an eye to blossom close-ups, you slip a *Kodak Portra Lens 3+* (Series V, \$2.95) into the appropriate *Kodak Adapter Ring* (Series V, \$1.40). Now, well equipped, you are ready to sally forth and conquer the world. At this season, it is worth conquering, wherever you happen to be.

F is for Flash

Just a reminder that high-speed Kodak Ektachrome Film, Type F, 35mm and 828, is balanced for flash bulbs, not floods. You need no filter with flash bulbs No. 2, 5, 8, 22, and 25; with photoflood bulbs, use an 82A; and for shots by daylight, an 85C. The flash guide number is 120 when you use a No. 5 or 25 bulb in a 4- or 5-inch polished re-

flector at 1/25 second. The photoflood index is 16 with the 82A. Process your own films, and you can be viewing the dry transparencies a couple of hours after the last shutter click.

Ultima Camera



Here is William W. Morris, photography director of *Popular Science Magazine*, leaning out of a Sikorsky helicopter and photographing the great Moltke Glacier near Thule, Greenland, with a Kodak Chevron Camera. The water below him would freeze a man to death in three and a half minutes.

Thule is where the U. S. has one of the most frostbitten of all its strategic air bases. To the ancients, "Ultima Thule" meant the northernmost part of the habitable world. Many a G. I. feels Thule, Greenland, is farther north than that. But Mr. Morris came back from roaming the bleak, wind-chewed ice fields still north of Thule with a warm spot in his heart for the Kodak Chevron Camera. It turned in a perfect performance under the toughest conditions.

For a long time, we have been talking about the rugged Chevron, the winter-and-summer smoothness of its ball-bearing lens mount, the accuracy of its rangefinder, the zip of its 1/800-second shutter, the superior sharpness and color correction of its Kodak Ektar *f/3.5 Lens*. We've called it a "man's camera"—for man-size jobs from tropics to pole. It's all of that, and a terrific value for \$198.50. As Mr. Morris, back home with a magnificent portfolio of black-and-white and color shots, can testify.

Focal harmony

"But why," said Dr. Watson, "did they use individually focusing lenses, instead of moving the whole camera front, or the film plane?"

"Elementary," replied Sherlock Holmes, placing his Kodak Stereo Camera on the table. "Just suppose, instead of doing it this way, we put our lenses on a long camera front and move the whole thing by rack-and-pinion, or cams, or some such linkage. It's quite obvious that any slack or play, or wear,



may let one end or one corner of the camera front run out more. That means one image will be larger, or wedged, or focus a slightly different zone. These are short lenses—a little variation goes a long way."

"Same thing for moving the film plane," added Holmes, puffing grimly at his pipe. "The basic problem is to keep two lenses perfectly co-ordinated to one film plane, even though they're 70 millimeters apart. Observe, now, how it's done on the Kodak Stereo. We mount the two lenses solidly on a solid camera body, and focus by *rotating them in unison on precision threads*. Turn one lens, and the other turns exactly the same number of degrees on a thread of exactly the same pitch. Hence, both lenses extend or retract the same distance, in exquisite harmony. No way to get out of step. And feel how smooth it is."

"Marvelous!" exclaimed Watson.

"Good sense," said Holmes.

(Neither the analytical acumen nor the sleuthing skill of a Sherlock Holmes

Amazing Values

is required for anybody to find his way to a Kodak dealer's, where he can [a] readily demonstrate to himself the sound logic and operational felicity of the Kodak Stereo Camera, and [b] become the happy owner of the excellent instrument for only \$84.50. It's the shrewd way to give a new dimension to your photography.)

Household hint

Prints which are displayed without glass covering (for example, exhibition prints, or photomurals in your living room or game room) may require cleaning now and then. Give them a coat of Kodak Print Lacquer, and you can wash the surface with mild soap and water. It moisture-proofs without affecting the surface sheen. An 8-ounce can, 78 cents.

3000/sec.

We make a camera that takes as many as 3000 pictures a second with one push of the thumb. Good sharp ones, too. It's the Kodak High Speed Camera and it takes 16mm movies so fast that when you project them at normal speed, one second of action stretches out to over three minutes on the screen.

By turning a blur of speed into a slow crawl, this camera solves design and en-



gineering problems in the most unexpected places. It has been used to help improve a beet harvester, make the spark hotter in a cigarette lighter, find trouble in moulds for glass ovenware, make a better gun for puffing cereal, improve the performance of a diesel locomotive engine, design better circuit breakers, and so on and on.

We find high-speed movies handy ourselves. They let us see exactly what happens when a shutter opens and shuts, give us a check on the action of the film

advance mechanism in a movie camera, help us make better products in other ways. In designing this super movie

camera, we learned a lot about movie camera design that shows up in our more conventional cameras, from the \$37.50 Brownie Movie Camera to the \$990 Kodak Cine-Special II. But more about them some other time.

(Incidentally, if you think you might be able to use a Kodak High Speed Camera in your work, send us a note on your company letterhead and we'll send you a booklet that tells all. Write to our Graphic Reproduction Division.)

Signet 35 Camera Now \$75

We depart from our usual calm Kodak Bulletin manner to bring you a sensational item of miniature-camera news:

The Kodak Signet 35 Camera now lists at \$75.

This is a pretty momentous event. Remember, we are not talking about some ordinary garden-variety camera. The Signet 35 is one of the great miniature-camera designs. It is the *only* miniature camera on which you can get a Kodak Ektar f/3.5 Lens combined with a ball-bearing lens mount and V-bearing coupled rangefinder—three elements which add up to the very peak of optical performance. It is a camera built to give you the crispest, clearest, sharpest miniature negatives and color transparencies you've ever seen. At \$75, it is a fantastic value.

Last year, we filled up a page of small type summarizing the good things about the Signet. To point up just what an extraordinary value this camera is, let's brief some of these points again:

• The Signet 35 is an integrated optical unit—from the back of the precision die-cast body to the front surface of the Ektar f/3.5 Lens... compact, handsome, efficient... all business, no useless widgets... focuses to 2 feet without attachments... stops all the way down to f/22 for extra depth... has a lens unsurpassed by any f/3.5 in the miniature field at any price... all glass-air surfaces of the lens are *Lumenized* for utmost color purity, clean tonal separation, and maximum light transmission... the rangefinder is coupled through the full focusing range... is combined with the viewfinder, giving you a large easy-to-use triangular focusing area in the full viewfinder field... has spring-

loaded V-bearings which eliminate *all* looseness, slack, and play...

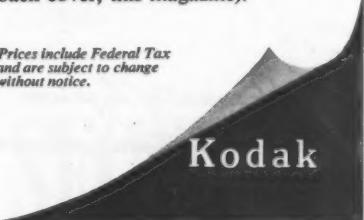
• The Signet's trouble-free Kodak Synchro 300 Shutter has an unusually rapid opening-closing rate, for extremely high light-transmitting efficiency... range 1/25 second to 1/300... reliable Class M synch at *all* speeds... heavy-duty, precise construction... lens and shutter are on a 50-ball ball-bearing mount, lifetime lubricated, velvet smooth in summer and winter... ball-bearing mount keeps lens and film in perfect relationship, with no looseness and no binding...

• The Signet's body is tough, rigid, die-cast aluminum alloy, with deep internal bracing... weight of whole camera, only about 18 ounces... size, 4 1/2 x 3 1/2 x 2 1/2 inches, just right for a firm two-hand grip... film winding is jam-proof and smooth; film glides along at a flick of the thumb... winding and rewind knobs are big, deep-rilled, easy to handle even with gloves on... shutter release, cocking lever, and focusing lever are all at your finger tips... all operating scales are visible at a glance from above... film counter reads *down* from 36 to 0, shows how much film you still have... quick-action exposure computer on back of camera... "red dot" system for quick exposure settings under "average" outdoor conditions... automatic double-exposure prevention... "repeat" exposures on the same frame when you choose... camera back removes completely for easy cleaning... mirror-smooth chrome pressure plate, no scratching of film... exterior metal surfaces handsomely satinized... covering is tough Kodadur—scuff resistant, moisture resistant, fungus resistant...

• And the \$75 includes Federal Tax.

All in all, it's quite a camera—just as capable as it is handsome (see back cover, this magazine).

Prices include Federal Tax and are subject to change without notice.



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Now is the time to make
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Today will never come again. Tomorrow will be too late to film forever the joy of wedding, anniversary, graduation, vacation and the happy events in your life. Capture all the action in personal movies!

NEW **Revere** "36"
16 MM MAGAZINE CAMERA

Its distinguished design and advanced features make movie-making a constant delight. You'll appreciate its extremely long-run spring motor; the new adjustable objective view-finder; easy ratchet winding key; simple-to-use exposure guide, 5 speeds and single frame for titling. Fine WOLLENSAK f 2.5 Cine Raptar Wocoted lens. Tax inc. \$139.50

"36"—16mm Magazine Turret. Versatility of 3-lens turret and corresponding objective view-finders; divergent turret head. Other features and lens same as "36" above. Tax inc. \$169.50

"48"—16mm Projector. AC-DC; simple 3-point threading; single knob control and base film compartment. With carrying case, 2-inch f 1.6 coated lens, 750-watt, 400-ft. reel \$182.50



*In pursuit of happiness
Revere adds to your pleasures*



"40"—8mm Magazine Camera. Budget priced luxury! Drop-in loading; adjustable view-finder; WOLLENSAK f 2.5 Wocoted lens, tax inc. \$99.50



"96"—8mm Projector. Extra 17mm wide angle lens attachment doubles picture size. 500 or 750-watt lamp. 400' reel. \$159.50

"T-1100"—Dual-Speed Tape Recorder. (3.75 and 7.5 speeds). High Fidelity "Balanced Tone"; single knob control. With microphone, radio attach. cord, 2 reels (1 with tape). \$159.50



"888"—35mm Robot Slide Projector. Completely automatic—shows 36 slides without touching a finger to it. 5-inch WOLLENSAK Wocoted lens; 500-watt lamp. \$119.50



REVERE CAMERA COMPANY • CHICAGO 16, ILL.

Dr. Cinema says...

"Guest editor" Glen Turner has some neat ideas on how to use 35mm color slides to improve your movies.

THERE ARE TIMES when even the best laid movie-making schemes go awry. Regardless of how carefully they were planned, most amateur films could be greatly improved with an additional scene or a bit of skillful transition. Take, for example, a western I filmed in the color-country of southern Utah a few years back...

Although this was strictly an amateur 16mm film, we brought together a cast of a half-dozen players, some authentic western props, and a volunteer production crew, and spent five days on location at the Capitol Reef National Monument. Things went great—or seemed to—until some three or four weeks later. By this time the film had come back from the processors, had been rough-cut, and was ready for projection in its entirety for the first time. This is an exciting moment in the making of any film, for it is

ed (for better pace) was a long shot of the desert country before a lone horseman appeared on the horizon.

Since it was a bit impractical to make a 300-mile round-trip to the Capitol Reef for an extra 10 or 15 feet of film, we decided to try solving our problem by making use of some of the 35mm color slides we had taken on the trip. Briefly, we would pick out color slides of a scenic nature (ones in which there were no live subjects or moving objects) and project them on a white card. The projected images would then be re-photographed in color with the movie camera.

The results were simply amazing. Thus far, no one has ever been able to detect which scenes were originally shot in the movie camera "on location," and which were made from 35mm slides in our living room!

Subsequent to our initial success, I have tried using 35mm slides as an aid to producing number of special effects—especially in connection with transitions. The order in which scene sequences will finally appear isn't usually arrived at until one enters the editing phase of producing a film. One spot that can often stand improvement is the transition from the opening title to the first scene in the main body of a film; another likely spot is the transition from the final scene to the "End" title. In many instances, an appropriate and smooth transition can easily be shot in your living room *providing* you had the forethought to shoot 35mm color slides of the locale that appears in your movie scenes.

A simple fade-in or fade-out can be made with either a roll-film or magazine-loaded camera by photographing a projected slide in the manner about to be described. A dissolve (the gradual disappearance of one subject as it is replaced by a second subject) requires a camera in which the film can be wound back for making a double exposure. If your camera has a backwind crank, it's a simple matter to wind previously exposed footage back the required number of frames to record the second image. Without a built-in backwind, you may have to wind roll film back by hand in the darkroom.



Above, set-up for photographing a title card. Below, set-up for recording a 35mm scene "transition" color slide.



at this point that you get the first notion as to whether or not you really have a worthwhile film.

For the most part, our results were quite satisfactory. The opening scenes, however, seemed too abrupt. The action seemed to begin before the proper mood had been set. What the film need-

Notice in the picture of the slide-copying set-up that the movie camera is tripod mounted, and that the 35mm slide is being projected on a sheet of white cardboard. By keeping the framing of the movie scene well within the borders of the projected slide image, the slight distortion or "keystone" effect caused by the angle of the projector to the white card will not show up in the final effect.

Here is the actual working technique for making a title-to-slide dissolve transition:

1. Photograph the wording of your title in the usual manner, making a slow *fade-out* at the end. If you use the lens diaphragm to produce the fade-out, make sure that the illumination on the title card is such that a large f/stop can be used at the beginning in order to provide the proper exposure. The larger the beginning f/stop, the longer and slower you can fade as you rotate the ring to close down the diaphragm opening. Lenses without click stops are best for this type of fade.

2. After you have made the fade-out by closing down to the smallest possible f/stop, rewind the film (as explained above) the number of feet or frames desired in the dissolve.

3. Focus a color slide in your slide projector upon a white card at close range. Determine the correct exposure by a meter reading taken directly from the projected image. With the movie camera on a tripod, focus upon the projected image. Be sure to make whatever compensations are necessary for parallax. I use a homemade rack-over, but a through-the-lens viewer, or any other method of avoiding parallax will do. Make a *fade-in* of the projected image; i.e., start with the lens diaphragm fully closed, and gradually open it to the correct exposure opening as predetermined by meter reading.

The best transitions result when you use contrasty letters on your title card. White letters on deep blue or brown work very well. As the dissolve progresses, the white letters will be superimposed for a few seconds over the scenic slide which follows. In choosing slides for transition, be careful to select those that are devoid of movement.

If you like to experiment, let your imagination go to work on the problem of using transition slides. A slow dissolve, or series of dissolves, for instance, might blend the seasons—winter, spring, summer, fall—into a "time-lapse" transition. Or why not project a slide fairly large and move in with the movie camera for dolly shots, a pan shot, or everything from a close-up to a long shot? Think about it—the opportunities are legion!—THE END

MOVIE SECTION ➤

MOVIES IN COLOR: EXACTING PROBLEM

"On-the-nose color is a must for movie-makers. Here are the keys to judging exposure by meter or chart"—Ernst Wildi

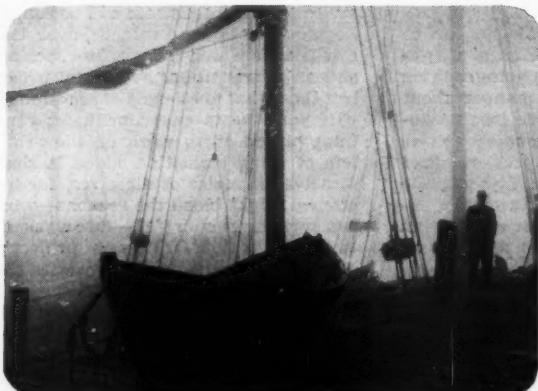
HERE ARE 8 EXPOSURE PROBLEMS—AND WILDI'S ADVICE ON HOW TO FILM THEM IN COLOR.



Problem: Correct exposure for light foreground subject, dark background areas. **Solution:** The girl is the center of interest; expose for her.



Problem: Subject is backlit, face illuminated by reflector. How to take meter reading? **Solution:** Expose as described for *Portraits* in chart, page 87.



Problem: To film subject in fog. **Solution:** Take close-up reading with reflected light meter; hold incident light meter in front of main subject.



Problem: How to base exposure if main subject is partly in sun, partly in shade. **Solution:** Best bet is exposure setting between sun and shade.

IF THERE'S such a thing as an iron-clad rule for movie-makers, it has to do with exposing color film. No matter what type of color film you use, the exposure for it has to be pretty much "on the nose." If it isn't, all sorts of unpleasant things will happen, one of the most noticeable of which will be the deathhouse pallor or chocolate suntan that poor exposure has given your unsuspecting human subjects.

Actually, there's nothing difficult about getting life-like color. If you have a photoelectric cell exposure meter, the chart on page 87 has been carefully compiled to give you pointers on the best way to go about filming a variety of typical outdoor subjects. Notice that the second vertical column in this chart applies to the use of a reflected light meter while the third column deals with measurements made with incident light meters. The type of meter you use is a matter of personal choice—either can give excellent results under

many conditions if used as described here and elsewhere (for making still pictures) in this issue.

If you have no meter . . .

In lieu of actually measuring the amount of light reaching a subject, thousands of movie-makers use charts, dial calculators, or printed cards as a guide to exposure. Those who consistently turn out beautifully exposed film owe their success to the ability they have acquired to judge two things: 1. The brightness of the color in their main subject matter; 2. The kind of light illuminating the subject.

In color brightness, subject matter is classified as light, medium (or average), and dark. Light colors include normal flesh tones, light pastels, yellow, etc. Orange, red, light green, and light brown (sun-tanned faces, for example) are considered medium. Predominantly blue, green or brown objects are

FOR TIPS ON SOLVING OTHER OUTDOOR EXPOSURE PROBLEMS, SEE CHARTS, PAGES 86, 87.



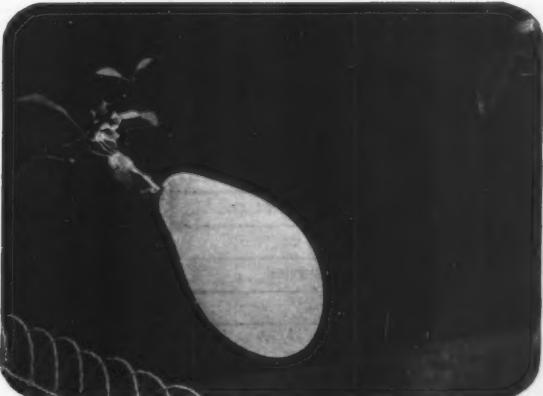
Problem: Exposure for scene composed of dark and light subject matter. **Solution:** Motion of water makes it center of interest; expose for it.



Problem: To keep main subject silhouetted in a backlit beach scene. **Solution:** Base the exposure entirely upon a reading for the beach area.



Problem: How to expose for a medium shot in which the main subjects are mostly in the shade. **Solution:** Base exposure on meter readings of the faces.



Problem: To expose for close-up of light-colored balloon in scene at left. **Solution:** Meter reading is best guide; otherwise stop down 1 to 2½ stops.

typical of those that belong in the dark category.

Don't confuse lighting with subject brightness. A red automobile is a medium (average) bright object. This is true whether it is moving in bright sunlight or in deep shade where, visually, it may appear much darker.

Variations in the *type* of light are even greater than variations in color brightness. Bright sunlight, for example, might be illuminating a subject from the front or side; it might be equally brilliant, however, in illuminating the same subject from the back. Or even though the sun is shining brightly, the subject might be located in anything from very light to very deep shade. Each of these conditions would require a different diaphragm setting in order to properly expose the main or primary center of interest.

To use the chart on page 86, find the type of subject

matter (in the left hand column) which most nearly approaches the general type of subject you intend to film. Then follow the lines to the right until you reach the column which most nearly describes the existing light or atmospheric conditions. The f/stop openings given in this chart are for outdoor color film exposed at 16 frames per second. For black-and-white film, or for use with other camera speeds, adjust the diaphragm settings according to the tables which appear at the bottom of the chart.

Whether by meter or chart . . .

Outdoor subjects are seldom so considerate as to be all one color, or uniformly lighted. With a number of different color brightnesses and light variations contradicting each other as to (Continued on page 118)

EXPOSURE CHART FOR 8 OR 16MM. COLOR FILM AT 16 FPS

SUBJECT		BRIGHT SUNLIGHT BETWEEN HOURS OF 10 TO 4				HAZE or CLOUDS	
		Front or Side Light	Subject Backlit	Subject in Light Shade	Subject in Dark Shade	Hazy Sun	Cloudy Bright
General scenic views, buildings	Colors: light pastels	1/8-11	1/5.6-8	1/5.6	1/4	1/5.6-8	1/4-5.6
	Colors: red, orange, light green	1/8	1/5.6	1/4-5.6	1/2.8-4	1/5.6	1/4
	Colors: blue, brown, dark shades	1/5.6-8	1/4-5.6	1/4	1/2.8	1/4-5.6	1/2.8-4
Portraits	Light skin	1/8-11	1/5.6-8	1/5.6	1/4	1/5.6-8	1/4-5.6
	Suntanned skin	1/8	1/5.6	1/4-5.6	1/2.8-4	1/5.6	1/4
Scenic views with large area of blue sky		1/11	1/11				
Snow scenes and Beach scenes	Long shots	1/11	1/11	1/8		1/8	1/5.6
	Close-ups	1/8-11	1/8-11	1/8		1/5.6-8	1/4-5.6
Close-ups of flowers	Colors: light pastels	1/11	1/8	1/5.6-8	1/4-5.6	1/8	1/5.6
	Colors: red, orange, light green	1/8-11	1/5.6-8	1/5.6	1/4	1/5.6-8	1/4-5.6
	Colors: blue, brown	1/8	1/5.6	1/4-5.6	1/2.8-4	1/5.6	1/4
Distant views		1/11	1/11			1/8	1/5.6
Pictures taken from airplanes	Low altitudes	1/8-11	1/8-11			1/5.6-8	1/4-5.6
	High altitudes	1/11	1/11			1/8	1/5.6
City streets		1/5.6-8	1/4-5.6	1/4-5.6	1/2.8-4	1/4-5.6	1/2.8-4
In the fog	Dense fog, no sun						1/4
	Light fog with sun almost shining through					1/5.6	
Sunrise and sunset	Sun fairly high		1/4				
	Sun low		1/2.8				
	Afterglow		1/1.9				

EXPOSURE FOR BLACK AND WHITE

Close two stops for films of ASA 32 to 50
(Kodak, Super X, Ansco Hypan)

Close three stops for films of ASA 100
(Kodak Super XX)

EXPOSURE FOR DIFFERENT CAMERA SPEEDS

Close 1 stop at 8 frames per second

Open 1/2	"	24	"	"
Open 1	"	32	"	"
" 1/2	"	48	"	"
" 1	"	64	"	"

HOW TO USE REFLECTED LIGHT AND INCIDENT LIGHT

SUBJECT		REFLECTED LIGHT METHOD	INCIDENT LIGHT METHOD
General scenic views and street scenes	Front or sidelighted	a) Point meter slightly tilted down at scene. b) Take close-up reading on subject of average brightness.	Hold meter in front of subject.
	Backlit	a) Point meter slightly tilted down at scene; open 1 stop. b) Take close-up reading on backlit subject; close 1 stop.	Point meter from camera position toward scene (like a reflected meter); open 1 stop.
Scenic views with large area of blue sky		Point meter toward blue sky.	Same as scenic views; close down $\frac{1}{2}$ stop.
Portraits	Front or sidelighted	Take close-up reading on lighted part of face.	Hold meter in front of model. (Follow specific meter instructions)
	Backlit without a reflector	Take close-up reading on face; close 1 stop.	Point meter from camera position toward model (like a reflected meter) and open 1 stop.
	Backlit with a reflector	Take close-up reading on face; close $\frac{1}{2}$ stop.	Point meter from camera position toward model (like a reflected meter).
Snow scenes and beach	Long Shots	Point meter at scene and open $\frac{1}{2}$ to 1 stop.	Hold meter in front of subject and close 1 stop.
	Close-ups	Same as Portraits.	Same as Portraits
Distant views Aerial shots		Point meter at scene and close $\frac{1}{2}$ stop.	Same as general scenic and close $\frac{1}{2}$ stop. (Incident method difficult to use for aerial shots.)
Close-up of flowers		Take close-up reading on flower	Hold meter in front of flower
Scenes with great contrast in lighting.		Take a close-up reading of darkest and lightest area and use a reading in between.	Measure the light falling on darkest and lightest area; use an opening in between if light varies.
Light subjects with dark backgrounds or dark subjects with light backgrounds		Take close-up reading on subject.	Hold meter in front of subject.
Small or inaccessible subjects		Take close-up reading on a subject of same brightness and illuminated the same way.	Hold meter in an area receiving same illumination as object.
Subjects in the shade		Take close-up reading on subject	Hold meter in front of subject.
Portraits with telephoto lenses. (Distant views same as scenics.)		Take a close-up reading of area actually included in the picture.	Hold meter in an area which has the same illumination as the picture area.
Foggy, rainy, and hazy days		Take close-up reading of main subject.	Hold meter in front of subject.
Panoramas		Pan with meter over area; use a medium setting. Avoid panoramas if difference between lightest and darkest reading exceeds $1\frac{1}{2}$ stops.	Pan with meter over area; use a medium setting. Avoid panoramas if difference between light and dark reading exceeds $1\frac{1}{2}$ stops.

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Here is year-round picture-taking enjoyment for the whole family with a fine precision-built camera at half the price you would expect to pay for such advanced features. Bright-image, ground glass focusing. Synchronized shutter for flash operation. Coated color-corrected f/3.5 taking lens, shutter speeds to 1/200. The perfect camera for black and white or color.

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MODERN STEREO

(Continued from page 32)

sive one. But using this system, it'll be necessary to first establish a "special" exposure index number for yourself. Take your meter outdoors with its Invercone or Photosphere or what-have-you incident diffuser mounted on it, and aim it directly at the bright noon-day sun when it's in a cloudless sky. These are the ideal conditions indicating an average Kodachrome exposure of f/6.3 at 1/50th, and are used to "set" your meter. Procedure: (1) Take the meter reading directly into the sun. (2) Using this reading, find the arbitrary film speed number on your meter dial that will result in making the recommended exposure read f/6.3 at 1/50th. (3) This particular number, regardless of what it is, and completely arbitrary as it may be, is the number that you will always use for this special system, regardless of weather conditions. (In my own case, a film speed number of "5" works perfectly with both my Weston Master and Norwood Director exposure meters.)

Give this meter system a try . . . it's so simple and effective you're bound to like it.

Use Fill-In Flash

Most of us with stereo cameras also have the indoor flash equipment that goes with it. It's a shame, then, not to put it to good use *outdoors* when the occasion arises to fill in troublesome shadows. Photo 2, of little Anne Nord-



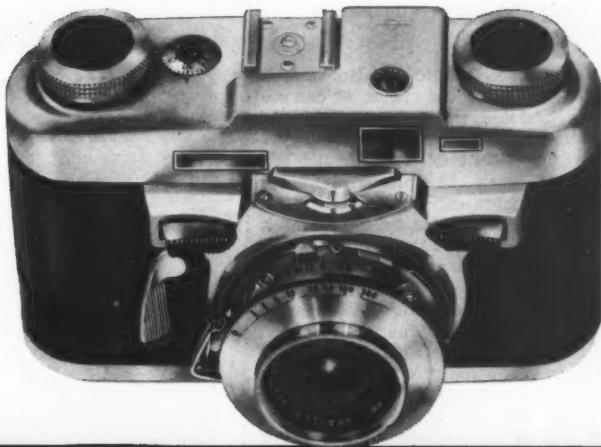
2. Don't by-pass photo opportunities because you don't know how to use fill-in flash. It's simple (see text).

quist and her daddy, is just one example of where the additional light of a flashbulb makes all the difference in the world. These situations of too-much-shadow may be encountered at any time, so it's good to be prepared for them.

Buy an inexpensive blue-plastic flash-reflector cover and use it with your regular clear flashbulbs. For regular stereo cameras, you should keep two types of flashbulbs on hand for this

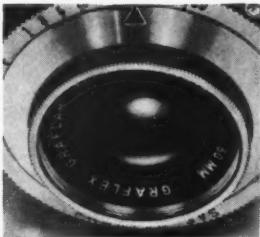
(Continued on page 90)

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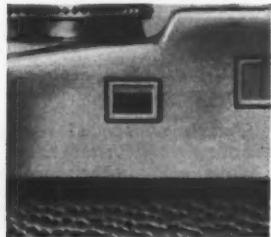
GRAFLAR f/3.5 LENS is color-corrected and coated. Full 50 mm. focal length for corner-to-corner sharpness.



SHUTTER SPEEDS from 1/300 second, for action pictures, to 1 second, *plus* bulb. Includes built-in self-timer for self portraits. All shutter speeds can be used with all types of flash lamps, as well as electronic flash.



SPECTRAMATIC FLASH SETTINGS eliminate arithmetic for setting correct shutter speed and lens opening for flash. "Red Dot" settings for outdoor pictures.



BUILT-IN RANGEFINDER is the *split-image* type (easiest for most people to use.) Is precisely focused when top and bottom halves are aligned.



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MODERN STEREO

(Continued from page 88)

purpose: the SM and the No. 5. The "figuring" is so easy that it can be memorized and, in the future, put into use automatically without worrying or wondering about whether or not it's going to work. It will! Your basic bright-sunshine exposure is still f/6.3 at 1/50th. Vary your opening half a stop up or down as the scene or subject indicates, but always stick to that one shutter speed. Then, when you're in a situation where your shadows are rather heavy or numerous, lighten them with the aid of a flashbulb.

Data: When you're as much as ten or twelve feet away from your subject or subjects, the No. 5 flashbulb is just right. A bit closer, at about eight feet or so, use the No. 5 bulb but cover it with a single layer of a white handkerchief stretched across the entire front of the flash reflector. This reduces the amount of light sufficiently to work at this closer distance. Still closer, around five or six feet, switch over to an SM flashbulb. Again, still closer, three or four feet, use the SM bulb but with the one layer of a handkerchief over the reflector. Remember to use the blue-plastic flashcover, of course, whether or not your distance calls for the handkerchief. And that's all there is to it; no complicated calculations necessary.

Golden sunlight

There's no special reason to stop shooting when it's late in the afternoon (or real early in the morning, for that matter) just because the sun is too low for so-called *proper color*. The "rule" against it, of course, is that during these later hours the color temperature of the sunshine changes and is no longer exactly balanced with color film. Personally, I've found that many times the "golden effect" produced is flattering (gives the skin a golden tan), rather than detrimental. More than once I've taken a series of stereos of a young lady right through an afternoon and up until there was no more light left to see by . . . and have been pleasantly surprised when I saw my results and discovered that some of the most beautiful photos were the ones taken late in the afternoon.

Also at this time of day there are *long shadows*. The shadows of the trees, in Photo 3 of Gini (Mrs. Alan) Young (page 92), were found late in the day and they certainly added much to the final effect of the original stereo.

Here's where my short-hand system of using an exposure meter comes in extremely handy . . . in fact, essential. Just point your incident meter directly at the fading sun, as explained before, to get an immediately accurate reading.

By the way, at the end of the day the last half hour or so of sunshine has gone down so much in color temperature that it comes pretty close to matching the balance of your indoor

(Continued on page 92)

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Wallace Litwin uses his Canons

(Serial Nos. 50,065 & 50,095) for his

Magazine Assignments

Wally chose Canon because it gives complete versatility for shooting under the most varied conditions. And, it is sturdy enough to take the "beating" a globe-trotting photographer usually gives his cameras. Wally uses both on his assignments (for Coronet, This Week, Colliers, etc.), each with a different focal-length Canon lens, or he loads one with color, the other with b & w film.

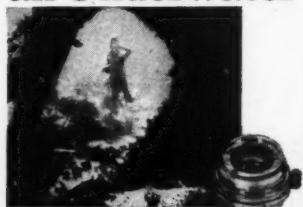


Wally found the Canon Copying Unit ideal for this extreme close-up of a fly beside the head of a pin. He uses the Canon extension tubes in combination to achieve image magnification. His 50mm. f:1.8 lens was used here with a single flood for lighting.



The Stackpoles take their Canons (Serial Nos. 78291 & 77576) on an Underwater Vacation

Peter and Hebe Stackpole are the nation's most enthusiastic underwater-photography fans! Naturally, they always take their Canons with them, because . . . whether exploring the ocean's sub-surface or the earth's outer strata, Canon's simplicity of controls and complete versatility make it the professional's No. 1 choice!



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Leo Stashin takes his Canons (Serial Nos. 81,959 & 85,561) on a Circus Assignment

Leo prefers a Canon to catch the glitter and excitement of the "Big Top" because of its versatility and unerring performance under the toughest conditions. He uses both his Canons on these projects . . . loading one with color; the other with B & W. Or, he often uses different focal length lenses on each—ready for immediate action!



Leo uses his Canon Auto-up for extreme close-up (still using Canon's rangefinder for focusing).



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MODERN STEREO

(Continued from page 90)

color film without the Type A conversion filters. Give this a try.

It isn't really necessary to give up outdoor shooting until you run out of



3. Golden sunshine and long shadows of early morning and late afternoon should be sought, and not avoided.

light to see by. Quite often I keep right on taking stereos in the evening twilight—just after the actual sunshine has disappeared below the horizon—by



4. At dusk, use the sky and backgrounds as silhouettes, with flash lighting up your foreground subject material.

relying almost completely on flashbulbs. The flashbulb lights up the subject in the foreground (indoor film, no filters) and the twilight makes interesting silhouettes out of the background objects. By using SM bulbs (but no blue filter this time) and the SM Flash Table given in last December's column, it's easy to come up with interestingly backgrounded semi-silhouette stereos such as that of my wife, Jackie, in Photo 4. Usually it's best to have your subject at a distance that gives you an exposure somewhere near 1/25th of a second at f:3.5, so as to allow enough exposure for the silhouette effect.—THE END

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NEW PHOTO BOOKS

(Continued from page 38)

contrast and graininess are explained. Correct development and exposure are also covered. Of special note are two sections of this chapter. The first of these covers desensitizing and developing by inspection. If read carefully and if the instructions are followed, the beginner as well as the expert will soon learn how to get negatives "tailor made" for easy enlarging. The second special section deals with intensification and reduction. These are used to correct poor negatives so as to make their printing easier.

Having given the photographer a solid foundation, the author goes on to chapters that tell about equipment, enlarging, papers, chemicals, setting up for work, composition, print contrast, print depth or darkness, making the print, dodging and burning in, flashing, vignetting, multiple or combination printing, diffusing and texture screens, border printing, photograms, how to use new cocaine, print intensification and reduction, toning, print drying and straightening, mounting, print finishing (spotting) and cash for your prints. A summary and handy index are also included.

Foldes draws heavily on his wide experience and ability as a teacher and writer on photographic subjects. As a result this is one of the clearest and most instructive books on this subject to date. Nothing is ever left to ambiguity, each topic is fully and clearly explained. The text is perfectly straightforward in style, yet it is not dry reading. Wherever possible, illustrations are used rather than words to make a point clear. These illustrations are extremely well done. In none of them is instructive quality ever sacrificed to "artiness." Nevertheless, all show good taste and artistic ability.

—NORMAN ROTHSCHILD.

FORMOSA, A REPORT IN PICTURES.
Horace Bristol, East-West, Tokyo. Hard cover, 73 pages, mostly photos. Price, \$3.

This is an interesting little book about an island at once remote and terribly near. While Bristol admits that his book may not be without personal bias, he has tried to confine himself to the portrayal of a people and a land without too much emotional involvement.

There are some fascinating scenes of how Formosans live, what they do for a living, what the land itself looks like. And, along with the Formosans, one sees the Chinese, training, working with their American supplied military equipment, getting ready—for what one knows not.—J. W.

These and other books are available through MODERN PHOTOGRAPHY Book Store; see advertisement on page 113.



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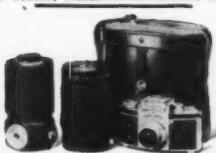
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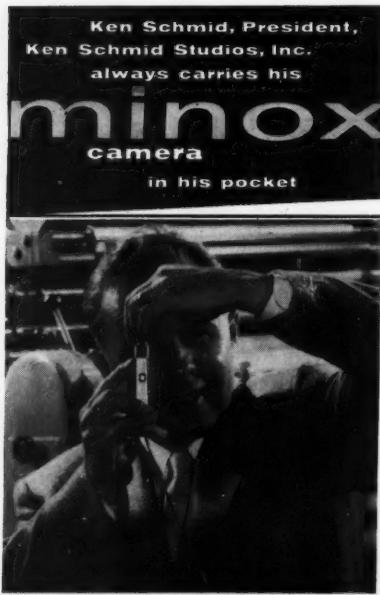
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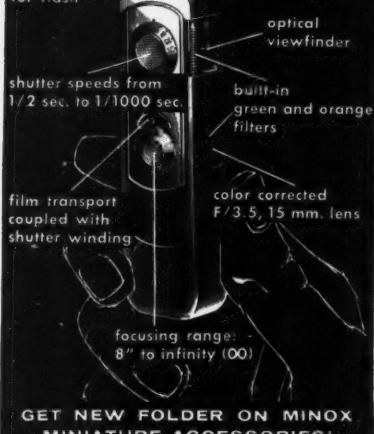
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MODERN'S 1955 DIRECTORY OF EXPOSURE METERS

The latest list of generally available photo-electric exposure meters, who makes them, their type and price.

NAME OF METER & MANUFACTURER	IMPORTER OR DISTRIBUTOR	REFLECTED LIGHT	INCIDENT LIGHT	PRICE	NOTES
Actino Germany	Photographic Importing and Distributing Corp., N. Y.	X		6.59	
Bertram Amateur Bertram, Germany	Willoughbys N. Y.	X		14.95	
Bertram Bewi Automat Bertram, Germany	Willoughbys N. Y.	X	X	29.50	Has Compur light-value scale.
Bertram Chrolon Bertram, Germany	Willoughbys N. Y.	X		19.95	Weights 2 oz.
Bertram Chrostar Bertram, Germany	Willoughbys N. Y.	X		22.95	
DeJur Dual Professional DeJur Amsco Corp., New York, N. Y.		X	X	26.95	
DeJur 5B DeJur Amsco Corp., New York, N. Y.		X		15.95	Case included.
Director M-2 Brockway Director Corp., New York, N. Y.		X*	X	32.95	*Photogrid reflected light attachment included in price.
Director M-3 Brockway Director Corp., New York, N. Y.			X	16.95	
G.E. PR-30 Mescot General Electric Co., Schenectady, N. Y.		X		15.95	
G.E. DW-68 General Electric Co., Schenectady, N. Y.		X	X*	24.50	
G.E. PR-1 General Electric Co., Schenectady, N. Y.		X	X*	32.50	*Incident light attachment included in price.
Hilba Combi Lux Switzerland	Karl Heitz Inc. N. Y.	X	X	139.50	
Horvex Metrawatt, Germany	Camera Specialty Co., Bronxville, N. Y.	X	X*	23.95	*Incident light attachment included in price. Additional supersensitive element \$7.50 extra.
Ideal Federal Instrument Corp., New York, N. Y.			X	9.95	Case included.
Ikophot IIa Zeiss Ikon, W. Germany	Carl Zeiss Inc. N. Y.	X	X*	28.00	*Incident light attachment included in price.
Leica-Meter 2 Metrawatt, Germany	E. Leitz Inc. N. Y.	X	X*	24.00	*Incident light attachment and booster cell included in price.
Leica-Meter "M" Metrawatt, Germany	E. Leitz Inc. N. Y.	X	X*	36.00	*Incident light attachment and booster cell included in price. Couples to speed dial Leica M3 camera.
Metraphot 2 Metrawatt, Germany	Karl Heitz Inc. N. Y.	X	X*	24.00	*Incident light attachment and booster cell included in price.
Minilux Germany	Camera Import Corp., N. Y.	X	X	21.95	
Minirex II Rex, Germany	Saul Bower Inc. N. Y.	X		9.95	Case included.
Minox Minox, Germany	Kling Photo Corp., N. Y.	X		29.95	Price includes case & chain.

NAME OF METER & MANUFACTURER	IMPORTER OR DISTRIBUTOR	REFLECTED LIGHT	INCIDENT LIGHT	PRICE	NOTES
Minox Minox, Germany	Kling Photo Corp. N. Y.	X	*	65.00	Price includes case and chain. Gold plated.
Polaroid-G.E. General Electric Co., Schenectady, N. Y.	Polaroid Corp., Cambridge, Mass.	X		14.25	Designed specifically for use with Polaroid Land camera.
Prize Dorner, Germany	Allied Impex, N. Y.	X	X*	12.95*	*Price includes case and incident light attachment.
Prize Record Dorner, Germany	Allied Impex, N. Y.	X	X*	18.95*	*Price includes case and incident light attachment.
Sekonic Leader Japan	Photographic Importing and Distributing Corp., N. Y.	X	X	7.95	
Dual Sixon Gossen, Germany	Photoptic Corp., N. Y.	X	X	17.50	
Sixti Gossen, Germany	Photoptic Corp., N. Y.	X	X	24.95	Case included.
Sixomat X-3 Gossen, Germany	Photoptic Corp., N. Y.	X	X	29.95	Has "color finder", measures color balance. Calibrated for Compur Light Value scale.
				17.50	
Skon SM-3 Quick G-M Labs. Inc., U.S.A.		X	X*	24.50	*Incident light attachment included in price.
Skon SM-4 Viewfinder G-M Labs. Inc., U.S.A.		X	X*	19.95	*Incident light attachment included in price.
Weston Cadet Weston Electrical Instrument Corp., Newark, N. J.		X	X*	16.50	
Weston D-R Direct Reading Weston Electrical Instrument Corp., Newark, N. J.		X	X	29.95	Invercone incident light attachment \$2.50 extra.
Weston Master II Weston Electrical Instrument Corp., Newark, N. J.		X	X	29.95	Invercone incident light attachment \$2.50 extra.
Weston Master II Cine Model Weston Electrical Instrument Corp., Newark, N. J.		X	X	29.95	Invercone incident light attachment \$2.50 extra.

FREE LITERATURE FOR MODERN'S READERS

E. Leitz, Inc. has compiled a complete new **Leica product directory** which includes every photographic item distributed by the company and gives a brief description and list price of each. The directory also contains helpful tables, charts and miscellaneous data applicable to all cameras. An unusual feature is the presentation of some compact technical data in both the English and metric systems. Punched for insertion in the special Leica binder, the new directory is available at franchised Leica dealers or direct from **E. Leitz, Inc., 468 Fourth Ave., New York 16, N. Y.**

Three new color folders are now available at camera dealers on the **Omega 120 camera** and **Omega and Automega enlargers**. Each folder carries a picture of the product on the front and contains full data and specifications about the product on the inside pages including full price lists. Copies may be obtained by writing the manufacturer of the Omega line, **Simon Brothers, 30-28 Starr Avenue, Long Island City 1, N. Y.**

Equipment Information From Exakta. Exakta Camera Company's new catalog, is now available to owners and prospective owners of Exakta and Exa cameras. Containing 28 pages and 50 illustrations and diagrams, this catalog includes a detailed description (optical and mechanical characteristics, application and price) of each product. Write to: **Exakta Camera Company, 705 Bronx River Road, Bronxville 8, N. Y.**

A new Edixa Stereo brochure describes the various models of the Edixa Stereo Cameras, features lens and shutter equipment, etc. This brochure is available free upon request from **Wirgin Bros. Camera Works, 705 Bronx River Rd., Bronxville 8, N. Y.**

A Filter-Use-Chart giving a comprehensive description of each filter type and conditions under which it may be used. An easy-to-use table of film speeds and filter factors is also included. For a copy of this leaflet, write to **Enteco, 610 Kosciusko Street, Brooklyn 21, N. Y.**

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AT LAST! You can now get wonderful quality National Photo Labs 35mm fine grain developing at a real rock bottom price! Just think your 36 exposure roll developed and printed by skilled laboratory technicians to King Size wallet prints—2 1/4" x 3 1/4" clear glossies on DuPont Varigam (except 1/2 frame mercury, etc. \$2.00). 4 days' service.

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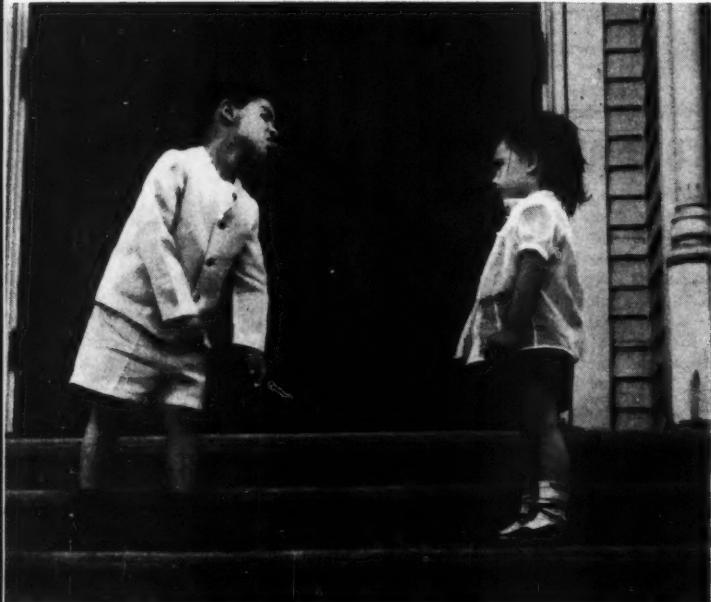
New Hyde Park 46, New York

TAKE the camera out of your subject's face—for a change of pace—when making candid human interest shots. Sometimes a side view will sum up the picture situation best. In the picture directly *below*, we see the subjects' respective postures, which say as much about their feelings as do their facial expressions! In fact, you may discover other times when it's advisable to leave the face out entirely, as in the picture *left below, opposite*. Isn't it quite enough to see two children off on an imaginary journey under cover of adult umbrellas? Had the camera met these wayfarers head-on, the charm of a picture taken in the land of "let's pretend" might nearly have been dispelled!

"I Tried It Myself" is a monthly contest for black-and-white pictures only. You may submit any number of prints, but be sure they are at least 4 x 5 or larger, and that each one has your name, address and all technical data on the reverse side. Anyone may enter, but please enclose a *self-addressed, stamped (first class postage)* envelope if you want us to return prints we can't use. All entries are considered for use elsewhere in the magazine. Send them to the attention of the Columns Editor, MODERN PHOTOGRAPHY, 33 West 60 Street, New York 23, New York.

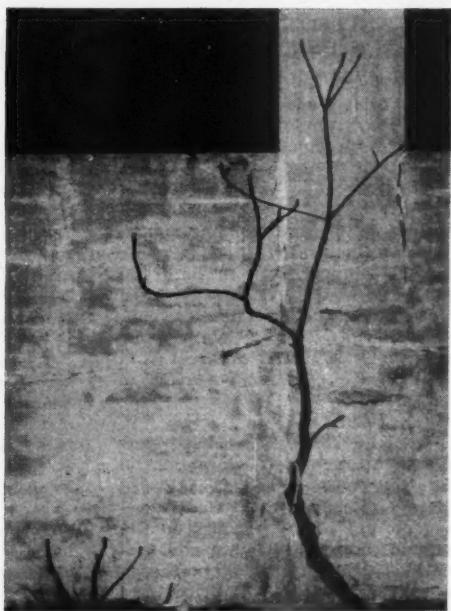


"I tried it myself"



THIRD PRIZE \$10. Low camera angle and fast thinking combined to catch reaction of young member of a wedding (*left*) to abashed bystander (*right*) on church steps. Neither paid the slightest bit of attention to the photographer, Peter Tasi, of Brooklyn, N. Y., who was using a Rolleiflex and Plus-X film, f/5.6 and 1/100 sec.

THIRD PRIZE \$10. An old factory wall can make a simple, pleasing pattern. But if you think such design is too "cold" include a living object such as a tree. Adolph Kohnert, Amenia, N. Y., used Rollei, Super-XX, f/4 and 1/50.





\$25 FIRST PRIZE. Sometimes you should shoot no matter what may interfere—even the "wrong" filter. Richard Magruder, Galveston, Tex., had been shooting water show through telephoto lens. Having barely replaced it with a normal lens (with red filter attached) he sighted unusual panorama in Praktica viewfinder and exposed quickly at f/5.6, 1/250, Super-XX. Filter plus burning-in gave dramatic effect.



SECOND PRIZE \$15. What better lends itself to pictures than the whimsical escapades of children in grown-ups' clothes or, as here, with grown-ups' "props?" R. Boyd, of Cleveland, Ohio, caught this "parade" with his 4 x 5 Graflex with 7½ in. Optar lens and a 2½ x 2¼ rollfilm back. He does not recall actual exposure, but it was determined by meter. The Super-XX film was developed in Finex-L.

**MODERN
PHOTOGRAPHY'S
MONTHLY CONTEST**

**FIRST PRIZE \$25
SECOND PRIZE \$15
THIRD PRIZES \$10**

THIRD PRIZE \$10. Last shot on the roll paid off for Rodger LaPelle, of Philadelphia, Pa. Waiting for "Elevated," he spotted figure which cast X-ray like shadow on platform window, whipped Rollei into action at f/5.6 and 1/100. Film, Plus-X. Print made on Varigam.



PANELESCENT LAMPS: WILL THEY ALTER ALL WAYS OF PHOTOGRAPHIC LIGHTING?

A new type of light source, distinguished by coolness, compactness, and even, diffused illumination, is presenting many potential applications in photography. It is totally unlike conventional light sources, and to get a proper appreciation of what it is and what it means, a brief review of present light sources will be helpful.

In nearly all cases, artificial illumination for photographic purposes is provided by, 1.) Incandescence (tungsten lamps and regular flash-type lamps) and 2.) Electric discharge through various gases (high-speed flash and fluorescent lamps). Less common types of light sources, such as the carbon arc lamp, are sometimes used. All of these illuminants may be roughly categorized as either (a) point sources where the radiant energy (largely visible radiation) is emitted from a comparatively small area, or (b) line sources where the entire length of a bulb or tube is luminous. In 1950 Sylvania Electric Products, Inc., introduced a third category of illuminant—an *extended area* source of light in the form of an entirely new Panelescent lamp. As the name implies, light is produced from the surface of specially treated panels. At the present time, this illuminant is adaptable to a number of specialized photographic uses, and certain of its inherent characteristics make it potentially capable of becoming at least the basic mode of lighting for darkrooms and photographic equipment.

How it works

The operation of the Panelescent lamp depends upon "electro-luminescence", whereby special phosphors, suspended in an appropriate dielectric or non-conducting material, become luminous when excited by a fluctuating electric field. The lamp's construction is such that uni-

form illumination is given from its entire surface. And this is accomplished without more than a small increase in temperature.

As shown in the drawing, quite thin (less than $\frac{1}{64}$ inch) special light-emitting coatings are applied to thin supporting sheets of metal, glass, or similar material. Thus, the lamp is only slightly over $\frac{1}{8}$ inch in total thickness.

It is these four basic characteristics: brightness uniformity, low operating temperature, broad surface illumination, and flatness, which make the Panelescent lamp especially interesting for photographic applications.

Since there is no filament or cathode, the new light source is free of the bright spot usually found in other types of illuminants. Whereas incandescent and fluorescent lamps require opal or ground glass to diffuse their light for most photographic applications, the Panelescent lamp is an inherently diffused, uniform light source. The brightness ordinarily does not vary more than a few per cent across the entire surface of a lamp—a decided advantage for the exposure of photosensitive materials.

Light at low temperature

The low operating temperatures of the Panelescent lamp are also of advantage, particularly in minimizing damage to photographic negatives. After burning for several hours, the maximum rise in temperature of a 120 volt Panelescent lamp is two to three degrees Fahrenheit. Although higher voltage lamps operate at slightly increased temperatures, their heat rise would cause no bad effects to photographic materials, and would help to maintain darkroom temperatures at a comfortable working level.

Perhaps two of the most interesting



Here's one of the possible photographic uses of Panelescent lamps—a safelight.

features of this new lamp are its thinness and the variations of lamp shapes that can be manufactured. Since the lamp is only a fraction of an inch thick, the amount of space it requires would be insignificant in the design of most darkroom equipment. Although present production facilities, according to Sylvania, restrict the maximum commercial size to lamps about 7 inches square, there are no inherent reasons why panels of any practical dimensions and shapes cannot be made.

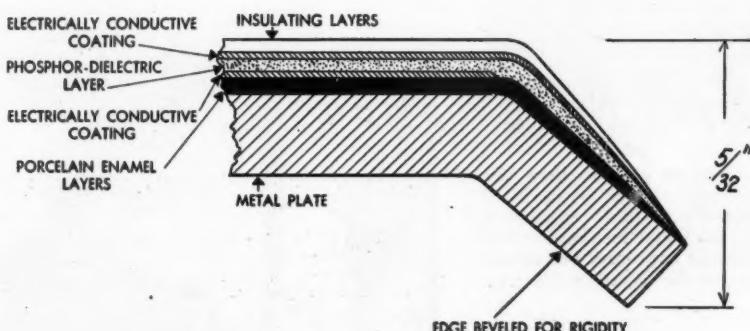
Up to the present, Sylvania has directed most of its commercial interests to green lamps operating at 120 and 600 volts. However, other colors, such as blue, yellow, red, and white, can be manufactured. Special filter coatings, which are now being developed, might become an intrinsic part of the lamp. These filter coatings could be used to alter the lamp's spectral energy output, as required by the spectral response of films and papers. With a rheostat, the lamp can be dimmed to a zero light output with no change in color characteristics.

Brightness range

Lamps designed for 120 volt, 60 cycle operation (normal house current) range in brightness from 0.1 to 0.2 foot-lambert. The latter figure is approximately 10 times the brightness of a sheet of white paper in full moonlight. Such lamps are highly suited to darkroom applications where low levels of illumination are necessary. A lamp designed for 600 volt, 60 cycle operation has a brightness 15 to 20 times (2 to 4 foot-lamberts) greater than the 120 volt lamp. These higher voltage lamps are operated from a small, inexpensive transformer about the size of a package of cigarettes. With comparatively expensive electrical components, brightnesses up to 12 to 25 foot-lamberts can be attained from frequencies in the

(Continued on page 102)

PANELESCENT LAMP CROSS SECTION CONSTRUCTION (Exaggerated Scale)



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ON CAMERA. Vistoscope gives your camera a 36° lens angle—50% more than with its present 24° standard lens.* Now your 8mm. camera is better than a 16mm. Your 16mm. camera is better than a 35mm.

*For telephoto lenses, too!



ON PROJECTOR. You use regular, color or black and white film in your camera with Vistoscope. Vistoscope squeezes the picture on the film, then unsqueezes it again when the same Vistoscope lens is attached to your projector.

This incredible lens actually increases the picture width by 50%, while retaining the true image height. It reflects amazing, life-like dimensions because it approximates the depth and sweep of natural vision. The one Vistoscope lens, used for both shooting and projecting, cuts down your film costs by eliminating the need for "panning"—gives you sharp, clear definition, edge to edge, with no close-up distortion.

The secret of Vistoscope, perfected by Prof. Albert Bouwers of Delft University, Holland, is that you are now using two different focal lengths at the same time—one for width and the other for height. The Vistoscope lens "squeezes" the picture on film, then "unsqueezes" it into its full-dimensional width when attached to the projector. Uses standard screen, standard film, color or black & white.

You and your friends will thrill to exciting, wide-screen movies taken with your own camera! Order your Vistoscope lens today—a small down payment will start you on a new adventure in home movie-making! Write for details now!

VISTASCOPE

Shoot the entire scene with Vistoscope! The bracket above the picture at the left shows the limited area your camera shoots now. With Vistoscope you add all the picture coverage outside the bracket + 50% more picture. You get the whole scene in a single

shot. You will shoot professional scenes and landscapes... pictures that seem to surround you because they encompass even corner-of-the-eye vision. That's full dimensional realism...as never before achieved in home movies!

shot. You will shoot professional scenes and landscapes... pictures that seem to surround you because they encompass even corner-of-the-eye vision. That's full dimensional realism...as never before achieved in home movies!

For the first time, with the new Vistoscope Anamorphic Lens, you can give your home movies exciting, full-dimensional realism that had never been possible before with 8 and 16mm cameras! Now available for 35mm and reflex cameras too!

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infinity to 4 inches)... \$384.95

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OMIC-RECTAFLEX
202 West 40th St., New York 18, N.Y.

PANELESCENT LAMPS

(Continued from page 100)

range of 1000 to 2000 cycles per second.

Present brightnesses of the Panel-
escent lamp suggest a number of dark-
room uses, such as safe-lighting; equip-
ment lighting; and illumination for
photographic printers. As a darkroom
safelight, the *Panelescent* lamp would
eliminate the incandescent lamp, the
filter, and the comparatively large lamp
housing normally used. It would result
in a cooler, more compact unit, as shown
on page 100. This could be a boon to am-
ateur photographers who must often
work in small, improvised darkrooms
where space is at a premium, and com-
fortable working temperatures are
something to be desired. Yellow or am-
ber lamps of the proper spectral char-
acteristics would be suited for general
darkroom lighting, and as direct safe-
lights for inspection during print de-
velopment. The surface brightness of
most safelights, such as the Kodak de-
veloping lamp with a Wratten OA filter,
is 5 to 6 times greater than the present
600 *Panelescent* lamp or comparable
color. However, this brightness de-
ficiency can be offset by increasing the
luminous area of the *Panelescent* lamp
over the working area to supply com-
parable levels of illumination.

Better darkroom lighting

Brightnesses of red lamps in the
same range as those recommended for
the Wratten Series 2 safelight filter are
now possible. With minor spectral
changes, these lamps could be used as
safelights for orthochromatic films.

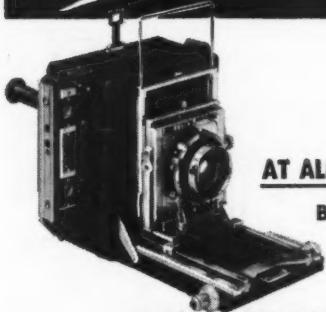
At present brightnesses the 120 volt
Panel-lescent lamp could be used to il-
luminate certain darkroom fixtures and
equipment essential to the control of
processing steps. A lamp manufactured
in the shape of a dial face for darkroom
timers or meters is a likely example.
Also, luminous plates on electrical
switches and outlets would make them
easier to find in the dark. Small guide-
lights could be hung in darkroom light
baffles, and on various hazardous work-
ing spots, such as protruding darkroom
equipment, sinks, cabinet corners, etc.
Silhouette signs could be applied to the
surface of lamps to denote directions,
exits, or danger. *Panelescent* lamps
could also be used to provide low levels
of "safe" illumination in paper and film
storage areas.

Since the *Panelescent* lamp is a very
thin, area-type of source, which can be
made in many shapes, it would be practical
for the illumination of diaphragm
markings on enlargers. A collar or cylinder
with appropriate f/stop numbers
applied to its surface could be slipped
over a lens barrel to ease the problem
of setting diaphragm openings.

(Continued on page 104)

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Weighs only 2 1/2 ounces, measures only 4" x 1" x 1 1/2"—yet, no other meter does better work. Fit the accessory shoe of your camera, or can be hand-held. The first dependable, small-size exposure meter designed to the modern pace. Exposures are read directly and instantly. Field of view corresponds with lens angle. Extremely sensitive photo-electric cell. Matches all standard lens openings from f/1.4 to f/22, and all shutter speeds from 1/1000th to 4 seconds. ASA ratings. Can be used for all types of still and movie photography, color and black-and-white. Handsome chrome plated finish. It's a conversation-piece that gives perfect exposures every time.



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That is why Gossen makes three: the Tri-Purpose Sixtomat x3, the Dual Sixon and the Sixti. While these Gossen meters differ in features, appearance and price, they are identical in quality of workmanship and perform with the same unvarying accuracy.

The Dual Sixon, at \$17.50, is probably the most popular of the three. It's the 'down-to-earth' meter — designed to determine correct exposure . . . that's what it does . . . quickly, easily, and without dials or gadgets to manipulate.

The Sixtomat x3, at \$29.95, represents the ultimate in light measuring instruments. It is more than just an exposure meter. Not only does it cover the widest range of film speeds, shutter speeds, and lens apertures but it serves also as

an efficient, practical, color temperature indicator. Advanced workers will find that the Sixtomat x3 fills every possible need.

The Sixti, at \$24.95, is overwhelmingly the choice of miniature and stereo camera users. It is itself a miniature meter that slides onto cameras equipped with accessory clips . . . offering the convenience of a built-in exposure meter. Yet, it can be used hand-held and takes up no space at all in pocket or bag.

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M-6

PANELESCENT LAMPS

(Continued from page 102)

With advancements in actinic light output the lamp could be used as the printing surface in contact printers. This would lead to the production of contact printers of no more than an inch or two in thickness, as compared to the present day heights of five to ten inches. An experimental contact printer is shown below. Using the same negative, paper, and developer, test prints made recently on this printer from a



Panelescent contact printer.

negative of "normal" density and contrast required a 75 seconds exposure as compared to a 13 seconds exposure with a commercially available printer of 25 foot-lamberts source brightness.

Compared to other illuminants the present Panelescent lamp must be considered a low intensity source, and is now limited to applications in the darkroom, where low levels of light are permissible. However, with continued development, the present limitations in light output will undoubtedly be raised, allowing a broader application of the lamp, e.g., in transparency illuminators, photocopy printers, etc. Viewing equipment employing the lamp would be cooler and more compact than the hot, cumbersome models found today. Permanent transparency illuminators could be made by incorporating the lamp as the backing for an ordinary pic-



Panelescent transparency illuminator.

ture frame. As shown in Photo 3 a color transparency could be illuminated indefinitely with no fear of the transpar- (Continued on page 106)

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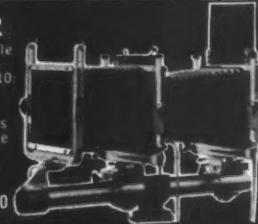
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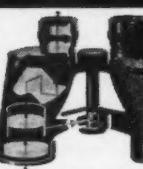
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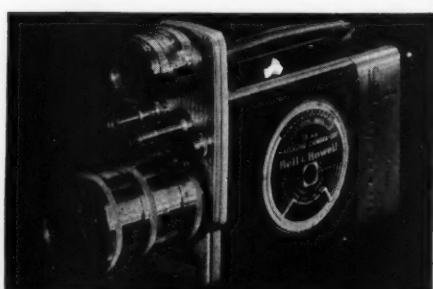


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PANELESCENT LAMPS

(Continued from page 104)

ency buckling from excessive heat. Brightnesses of 50 to 100 foot-lamberts, probably not so far away, would allow the use of such illuminators under normal room lighting conditions of offices, business establishments and museums. These brightnesses would also be within the range of the requirements for X-ray viewers for doctors and dentists.

Looking ahead into the more distant future, the Panelescent lamp may someday be used as the light source in enlarging. By replacing the diffusing opal glass with a Panelescent lamp, more compact and cooler diffusion-type enlargers could be made through the elimination of the large incandescent or fluorescent lamp housings on current models. Present lamp brightness, however, would have to be increased appreciably to make this application possible.—LLOYD E. VARDEN

The editors and Mr. Varden are indebted to Mr. L. J. Moynihan, Applications Laboratory, Sylvania Electric Products, Inc., for providing most of the data for this article, as well as for all of the illustrations. Sylvania engineers have been instrumental in developing the electro-luminescent lamp; this is a review of their accomplishments in devising photographic applications for it.

CORRECTION ABOUT POLARIZING FILTERS

In the article about Ektachrome 35mm film in the May issue of MODERN, the following caption appeared with one of the color pictures:

"Use a Polarizing Filter to contrast bright, light subjects against dramatically darkened sky. With Polaroid filters, you must allow 2 full stops more exposure, a great handicap with Kodachrome...."

"Polaroid filter is also used to subdue unwanted reflections...."

It has been pointed out to us by Mr. Henryk Nagel, President of Enteco Industries, Inc., that this might mislead some readers to think that the terms "Polarizing filter" and "Polaroid filter" were synonymous.

Actually, the name Polaroid is a registered trademark of the Polaroid Corp. and should not be applied to any polarizing materials except those of the Polaroid Corp. MODERN's editors are glad to point out that several firms, including Enteco Industries, market polarizing filters which are not Polaroid filters.—J. W.

BOOKS IN USE

by GEORGE B. WRIGHT

Putting the clothes on exposure

The same problem has faced every photographer from Fox Talbot and Daguerre up to the adolescent holding his birthday Brownie in his hand for the first time: How long shall I leave the darn thing open?

There has been a clear line of many hundreds of books from the early daguerreotype manuals down to the present-day, devoted partly or wholly to answering this question of exposure.

Film is faster, today, but the problems of range and contrast, gradation and the placing of the important areas on the section of the H&D curve where they will best convey the emotional effect you want are still the same as they have always been.

Most of the books available today are fairly accurate, but some of them are unnecessarily complex in presentation. Here are some of the better books. They differ considerably in approach and treatment, but they are all reliable and the choice between them is a personal one.

The "system-making" writers

Exposure problems are frequently described as part of a system by those photographers who have worked out effective methods and committed them to print. In addition to a chapter or so particularly on the problem, there are other references all through the text—every negative is, of course, a specific exposure "problem."

I would recommend Berenice Abbott's *New Guide to Better Photography* (Crown, \$3.95), for a comparatively lucid, straightforward review of a method of work which she has used for some great pictures. Andreas Feininger now has several books which are all steps in a complete structure of working methods. You could begin with either *Feininger on Photography* (Crown, \$6.95) or his *Successful Photography* (McGraw-Hill, \$3.95). Either of these will show how an experienced photographer balances all of the factors and the variables as he works and works rapidly.

Another excellent "system-maker" is Ansel Adams. There are four slim books in print now (of a promised six) as well as the original beautiful little *Making a Photograph* (Studio, \$4). The series (Morgan and Lester, \$3 each) includes *The Negative*, a system of exposure calculating which some critics have found to be over-complicated, but which those who have mas-

(Continued on page 108)



Two outstanding TDC cameras set new high standards in stereo

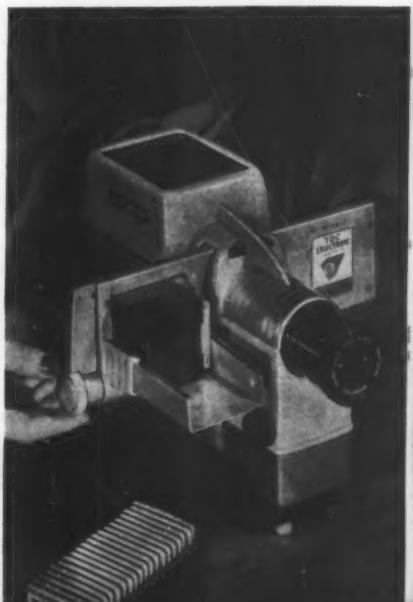
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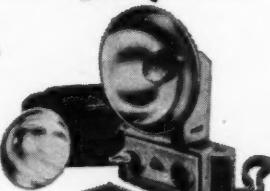
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Case	\$10.95
Flash Gun, (with 2 reflectors)	12.95
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SET **SIGHT** **SNAP**

Simple as that



BOOKS IN USE

(Continued from page 107)

tered it report as practically infallible. I feel that if your taste runs to subjects, such as landscapes, where you can stop to think without the picture disappearing while you cogitate, then Adams' "zone system" of placing values is probably a certain guarantee of perfectly-exposed and developed negatives every time. It is doubtlessly true also that if you have his methods "in your bones" you can make intelligent guesses (in the manner of all professionals) even in fluid and rapidly changing situations.

The full-dress treatment

There are two English books which came out several years ago which treat exposure as a separate, book-length subject. Both of them are good, but I have a personal inclination to choose W. F. Berg's *Exposure* (Focal, \$4) over J. F. Dunn's *Exposure Meters and Practical Exposure Control* (Fountain, \$7.75). Dunn, however, as the title indicates has a great deal of material on the actual use of the various types of meters which is extremely valuable but missing from the Berg book.

Dr. Berg is a scientist who works for Kodak, Ltd. and turns out papers on the latent image which only Lloyd Varden can understand. Yet, like a few such experts, he can also present material for the beginner in such a clear, exact way that anyone can understand and put the knowledge to work.

Berg will give you the most complete understanding of the whole process of exposure; Dunn will give you the most on how to use your meter in working practice.

Logarithms and log-jams

There are also a number of "textbook" approaches to photography—some of which are frighteningly dull. Yet, substantially the same material is presented by other authors in a way that a college undergraduate should be able to follow.

One excellent one is the new edition of L. P. Clerc's *Photography, Theory and Practice* (Pitman, \$15). It will give you a complete review of theory including a concise outline of exposure (pages 219-232). Also good is the re-written classic by C. B. Neblette under the new title of *Photography, Materials and Processes* (Van Nostrand, \$10). This has little reference to situations you will encounter, but materials and terms are American rather than European.

One book, which I found very valuable some years ago, seems to get little publicity although it has remained in print and selling for some time. This is Miller's *Principles of Photographic Reproduction* (Macmillan, \$6). This is a college text, but written by a man who obviously is an enthusiastic amateur photographer himself as well as a professorial type. Theory is always

(Continued on page 110)

New. Never - before Perspectives...



*I*n photography, the theme of a picture is sometimes only a *matter-of-fact* part of the whole. The real *magic* is often provided by the mysterious depth, or the panoramic width. And, of course, there's the photographer himself, limited only by his imagination . . .

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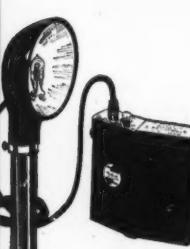


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BOOKS IN USE

(Continued from page 108)

translated into practical applications. Obviously, this list isn't complete, by any means. The AMPHOTO catalog lists many other titles. Send me a post-card and I'll have a copy sent you, or send me a stamped envelope if you want my frank opinion of how valuable any of them will be for your own problems. (Address at end of column.)

Questions in the mail

Can you suggest a book on composition? I wish to improve my ability at "seeing" pictures. S. F. D., Mass.

Most books in this field are useless, but there are some new ones in manuscript I've seen which are helpful. I'll review the whole field next month in this column.

Reference manual

What is the best "encyclopedia"—not for terms, but for practical problems? P. V. A., Virginia.

I don't know anything with as much information as the *Photo-Lab Index* (Morgan and Lester, \$17.95). This is kept up to date with a quarterly supplement which includes both replacement pages and usually additional new ones.

Color slides

I need a book on making color slides, a real reference book. H. B., Ill.

I'm sending the AMPHOTO catalog which lists several such. Many amateurs seem to like Fred Bond's *Making Better Color Slides* (Camera Craft, 2 vols., \$3.50 each).

Flowers and gardens

What book covers flower photography in color for both close-up and general views? R. M. M., Mo.

You should have *Photographing Your Flowers*, by John and Mary Roche (Greenberg, \$1.95). This husband-and-wife team turns out a large fraction of the top work in the East and the book spells out their methods.

Portrait lighting

I am interested in a first-class book dealing with lighting in everyday and glamour portraits, something which goes into full detail. J. P. T., W. Va.

There is a British book which has more detail than any other, *Lighting for Portraits*, Walter Nurnberg (Fountain, \$5.)

Do you want more information about what's in print on any photographic subject? Send your question and a stamped, self-addressed envelope to Books in Use, MODERN PHOTOGRAPHY, 33 West 60th St., New York 23, N. Y. All books mentioned here (except where noted) are available from MODERN'S bookstore by mail.

BEST METER?

(Continued from page 51)

Some meters are designed for use only with specific cameras. If you use such a camera, consistently, the special meter may be of great advantage. In the case of the little G. E.-Polaroid meter it is a necessity, for the Polaroid Land camera has a special shutter-lens opening system using numbers from 1 to 9, instead of the usual fractional seconds and f-numbers.

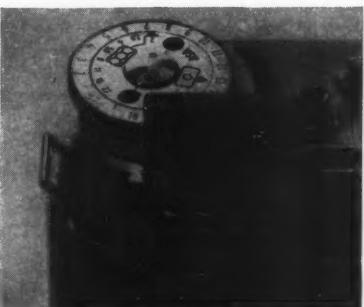
For the Leica M-3 camera there is a special little meter which fits into the accessory shoe. It couples to the shutter



Leica meter helps adjust camera.

speed dial and automatically adjusts shutter speed as you work the meter's computer.

A highly specialized meter is built into the new Retina IIIc, a camera equipped with the new Compur Light Value Scale shutter. All it tells you is



Meter on Retina IIIc is built in, tiny.

a single LVS number, and you set the shutter accordingly.

Meters are fairly delicate instruments and should be protected from shock or light damage by a case. Question: can you use the meter in the case, or do you have to undress it every time you want to use it?

Another approach is to have the case be a self-contained part of the meter, as in the Sixon and Sixtomat. This is the same roller blind which is used to convert the meter from reflected to incident light use.

On page 96 you will find a directory listing most of the available exposure meters, plus information about manufacturer, importer, type and price.

—THE END.

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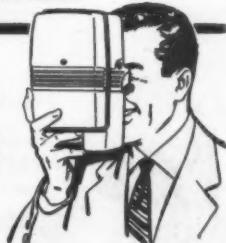
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Manufacturer	Filter Type	Average Transmittance
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BAD EXPOSURE

(Continued from page 72)

regions which are present in our picture.

It is worth while looking at this phenomenon in a little more detail, and especially to follow up the fate of the light entering a photographic emulsion layer. The individual emulsion grain which becomes developable as the result of a sufficient exposure to light is very small, of the order of 1/10,000 inch or less in diameter. The coated emulsion layer may be some 40 grains deep, the grains being distributed randomly and separated one from the other by gelatin. In a medium such as this, scatter of light is bound to be heavy.

How the image spreads

Imagine then that we illuminate only a small area on the emulsion surface with a fine spot of light and that we give in turn a series of increasing exposures to different parts of the emulsion surface. We can picture what happens by comparing the emulsion with a layer of sand and the light with rain drops, the layer being partly protected by a sieve. At first only the surface of the sand will get wet, but as exposure continues, the water will reach further and further into the depth of the layer. At the same time, however, the water will spread sideways, and the wet spot will increase in size.

This is quite an adequate description of what happens to light in an emulsion layer. A correctly exposed negative will be recorded in the regions of the emulsion layer quite close to its surface, and as exposure is increased, more and more of the image will be recorded in the depth of the emulsion. At the same time, the heavily exposed parts of the image will spread in size progressively as the camera exposure is increased.

This effect is most obvious when pictures containing small detail are exposed against the light. Imagine a pattern of twigs of a tree photographed against the sky. With increasing camera exposure, the sky density spreads out more and more and simply swamps the lesser density of the twigs in the negative. As a result, the originally black twigs will appear to be progressively washed out and may in the end disappear altogether from our picture.

It is this loss in resolution which is one of the most powerful reasons for keeping the camera exposure as short as possible consistent with good tone quality in the print.

What happens to resolving power?

Our discussion has been kept in general terms because the term "resolving power" is rather difficult to specify. An idea of the resolving power of an emulsion may be gained by printing onto it (Continued on page 114)

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Size	B&W	Color
8mm 25' dbl. roll	\$1.15	\$2.75
8mm 25' dbl. mag.	1.75	3.00
16mm 100' roll	2.75	7.40
16mm 100' roll COMMERCIAL KODACHROME \$5.00 (incl. Dev.) to be sent to Kodak		
16mm 50' magazine	1.90	3.75
Processing included—		
With purchase of 6 rolls B&W of any size—ONE FREE.		

BULK MOVIE FILM 8mm & 16mm

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50' rolls .45—8mm & 16mm 100' rolls .90		
1350' (25' rolls) \$9.95—16 mm 400' rolls \$3.60		

(this is a fine grain) PANCHROMATIC FILM
Processing not included

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\$1.00 (3 for \$2.75)	
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120 & 620 color (ANSCO).....	.75¢ a roll
120 & 620 color (AERO EKTACHROME).....	
Weston 40.....	3 for \$2.85
35mm 20 exp. B&W.....	.25¢
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Minimum order 4 rolls	

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Packed on 4 Camera spools 25' each	
Processing—50c 25' double	
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Airplane scenes KODACHROME	\$1.00

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5 1/2x20' Super XX Tri S Pan.....	.99
5 1/2x26' Super XX Tri S.....	1.59
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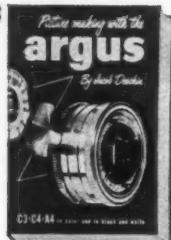
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133



Picture Making
With the Argus
by Jacob Deschin

An informative and reliable book that tells in clear language how to obtain best results with these cameras. Special section on color. Chock full of swell pictures.

\$3.00

161 Photography Year Book 1955

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BAD EXPOSURE

(Continued from page 112)

a resolving power test chart, either by contact or by projection. The resolving power would be defined as, say, the number of lines per millimeter which can be clearly recognized in the picture of the chart on the material under investigation. The actual figure obtained would depend, however, on the conditions of exposure, the contrast of the test chart (that is, the ratio of the light transmission of the light and dark parts), the behavior of the lens, etc. Thus the numerical value of the resolving power is of somewhat academic interest, but the dependence of the resolving power on the exposure conditions can be readily demonstrated by means of test charts like that shown on page 73.

In any case, the resolving power is a somewhat artificial concept since the regular array of black and white lines of a test chart never occurs in practice. In recent years "acutance" or "sharpness" has been introduced into photographic terminology, a concept which gives a much better idea of how an emulsion will behave in practice. While a detailed discussion of this will take us too far here, we need only note that the impression of sharpness of a picture severely deteriorates with excessive exposures.

Our old friend graininess

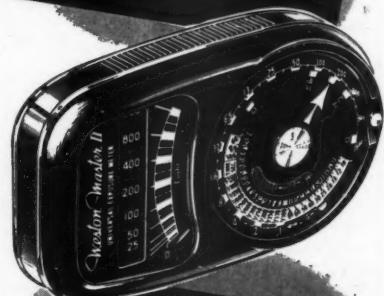
A photographic negative looks "grainy" because even in a perfectly evenly exposed and processed area, the density varies from place to place. This local variation in density is brought about by the fact that the sensitive emulsion grains are distributed chance-wise in the emulsion layer. In the emulsion underneath any small area on the surface of the film, the number of grains fluctuates from place to place around an average value, and these fluctuations follow the laws of chance. The same is true for the developed grains in a uniformly exposed and developed area.

The graininess of a negative depends on a number of factors. Perhaps the most important is the size of the grains. The larger the grain size the heavier the local density fluctuations and the more pronounced the graininess of the negative. Since it is clearly the size of the developed grain which matters, the method of development chosen may have a profound effect on graininess.

The size of the emulsion grains also determines the sensitivity of the photographic emulsion. In general, the exposure required to make any one grain developable varies little with its size, so that a coarse-grain emulsion, which contains fewer grains per unit area than a fine-grain one, requires less light to record an image; in other words it is faster. Therefore, the faster an emulsion, the more grainy the picture tends to be.

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With many films, the sensitivity can be increased by increasing the time of development. This at the same time tends to increase the size of the developed grains and thus the graininess. The deleterious effect of this is, however, compensated for, at least to some extent, by the fact that the more heavily developed film will tend to have a higher contrast and thus requires printing on a paper of lower contrast. This brings us to the question of *graininess in the print* which is of greater importance to us than the somewhat academic question of the graininess of the negative.

Why prints look grainy

The grains in photographic papers are so fine that they do not in themselves produce any appreciable graininess. The print graininess is brought about essentially by the density fluctuations in the negative which represent local exposure differences during the process of printing and are translated into local fluctuations in density in the print.

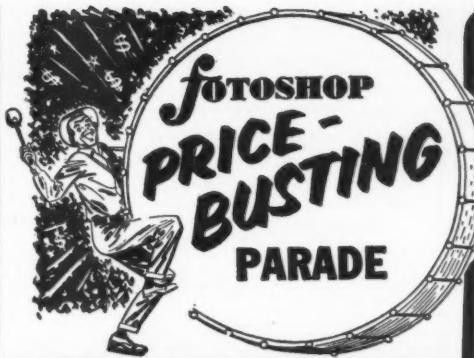
The laws governing the formation of the local density fluctuations in the print are the same as those ruling the formation of the image proper. This means that if we print on a paper of high-contrast, a more grainy print will be obtained from a given negative than if we print on a low-contrast paper. If we develop our film more heavily, thus producing worse grain in the negative, the fact that we would print this negative on a softer grade of paper would tend to keep down the print graininess.

Turning now to the effect of exposure of the negative on the graininess in the print, it has been established that the density fluctuations in the negative increase continuously with increasing density, that is, with increasing camera exposure of the negative. The more heavily exposed negative has, of course, a higher average density and in order to obtain a print of good tone reproduction, a heavier printing exposure is required. This in itself may be a nuisance, especially if printing is done by an enlarger at high magnification. The more serious aspect of the situation, however, is that the heavier density fluctuations of the denser negative are directly translated into more pronounced graininess in the print. Indeed, the heavier the exposure of the negative, the worse the print graininess becomes. This then is the second reason why it is important to keep the camera exposure to a minimum.

Halation causes trouble, too

Halation is another phenomenon which is brought about by the scattering of light in the photographic emulsion. If scattered light reaches the back of the film or plate at an angle which is smaller than a certain critical angle, it is totally

(Continued on page 116)



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BAD EXPOSURE

(Continued from page 114)

reflected. The effect shows up in photographs comprising very light areas surrounded by dark, such as in a night photograph of street lamp. In a bad case, the lamp may appear to be surrounded by a ring or halo: hence the designation "halation."

With modern films and plates, halation is not a serious problem as a rule, since the back surfaces of these materials are coated with an anti-halation layer which absorbs any light that may get through the emulsion layer. With film, moreover, the support is so thin that if any ring is formed at all it will lie very close to the source of light to which it belongs.

This may, in fact, be the more serious condition from the point of view of print quality. Whereas halation obtained with a plate is obvious, and may indeed make a picture more attractive, it occurs only in hidden form on the film and is another factor which may spoil resolution and sharpness in a photograph.

Here again it is important to remember that halation becomes more pronounced as you give more exposure to the negative. Once more we are led to the conclusion that from the point of view of print quality it pays us to keep the camera exposure to a minimum.

How to avoid these troubles

The wide latitude inherent in modern films is deceptive in the sense that the term latitude refers only to the problem of tone reproduction. This latitude does not exist with respect to two other important factors entering into print quality: resolution of detail or sharpness, and graininess in the print. Both suffer severely as the camera exposure given to the negative is increased beyond the minimum value necessary to obtain an excellent print from the point of view of tone reproduction. Add to this the possible danger of halation and the nuisance of a dense negative in enlarging.

All this adds up to one conclusion: There is no substitute for a correctly exposed negative.—THE END

Dr. Berg joined the Research Laboratories of Kodak Ltd., Harrow, England, in 1936. He has always been interested in determining the basis for exposure and collecting exposure data. As a result of his studies in these fields he compiled the first British Standard Exposure Tables. At present he is in charge of photographic emulsion studies at Kodak Research Laboratories. Dr. Berg is one of the world's leading authorities on the scientific theory underlying exposure, and is the author of a remarkably readable book, *Exposure*.



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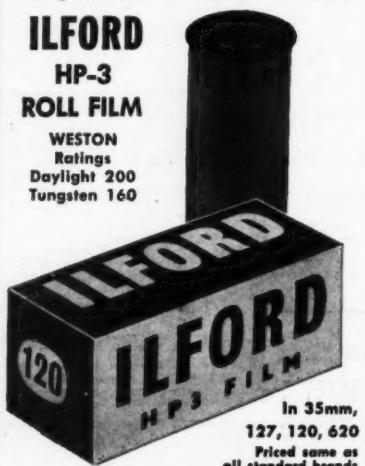
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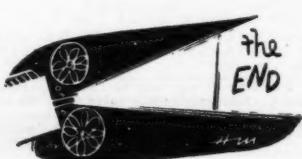
(Continued from page 86)

what the correct exposure should be, it's up to the photographer to be the presiding judge and jury. For a city street (or similar scene) with sunlight on one side and shadow on the other, I suggest exposing for the sunny side and forgetting about the shadow side. Reason: The shadow areas can go quite dark and still be acceptable—but a "burned-out" sunlit scene loses its color and becomes unsightly on the movie screen. If, however, an important subject appears partly in the sun and partly in the shade (as, for example, sunlight filtering through the trees), I would choose an f/stop *between* what would normally be required for photographing the subject in complete sunlight or complete shade. In other words, a compromise is the best bet in a case of this sort.

A lot depends on judgement

Personal judgment is also required when it comes to human subjects outdoors. Normally it is best to expose correctly for whatever you want to dominate a scene as its main center of interest. If you are filming a red car traveling along a highway, for example, your exposure should be for the car itself rather than for the colors of the highway embankments, background foliage, etc. But if there are humans in the scene who appear in the foreground or fairly close to the camera—watch out! This is a case for judgment rather than meters or charts.

We all know that people in a scene have a way of usurping the scene no matter what the photographer originally intended the main subject matter to be. Thus if you expose correctly for the red car, you may cause the flesh tones of the people in the scene to take on a ghostly pallor or a deep suntan. When this happens, you can forget all about what your subject was supposed to have been. The scene is twice ruined—once for misplacing the original subject, and again for unnatural skin tones. The best thing to do when people occupy the foreground of a scene (and particularly when they are close to the camera) is to forget what a meter or a chart has to say about everything except the proper exposure for the skin tones of people. When it comes to taking liberties with color rendition, cars are much more understanding than relatives or friends.—THE END.



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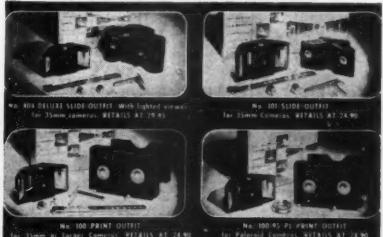
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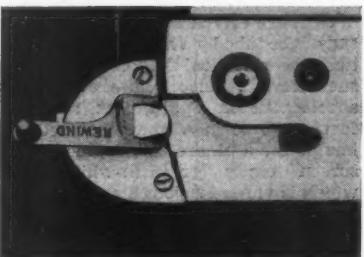
(Continued from page 79)

foreheads obstructed the wheel. If you're left-eyed, you'll have to hold the camera away from your face slightly while focusing.

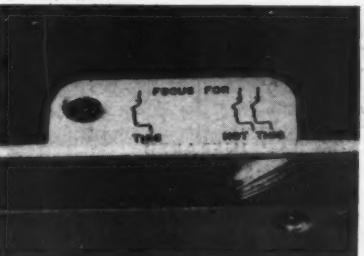
Usually, a new camera has a great many more bugs than one such small complaint; but we couldn't find them in the Kin-Dar—and we certainly looked most critically.—THE END.



Here's how you hold the Kin-Dar. It's easy for right-eyed people (see text).



Folding rewind lever really speeds up reloading operations, handles easily.



Graphic rangefinder instructions near finder window, at the rear of the Kin-Dar, preclude focusing difficulties.

\$50 STERÉ-ALL

(Continued from page 78)

The Steré-All body is made almost entirely of plastic. It's rugged, but a bit bulky. The lenses proved to be of good quality but vigneted slightly in the corners when wide open. This tendency, however, is frequently found in the most expensive stereo cameras. At about \$49.50, the Steré-All seems a good bet for the beginner or the photographer who'd like to get into stereo but feels the technical end of it may get too complicated for him.—THE END

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What's Ahead?

by LLOYD E. VARDEN



Seeing in the dark

Many months ago in this column I discussed various methods which had been developed during the war for "seeing in the dark" and suggested a few possible applications of the methods in photography. At that time no equipment was available commercially, and the scarce war-surplus devices were not particularly suitable for anything but military purposes. Recently, however, the Farnsworth Electronics Company introduced an infrared viewer (Model 100A) that not only produces a much better image than wartime instruments, but is also convenient in size for photographic uses. The viewer is marketed in the photographic trade by J. A. Maurer, Inc., 37-01 31st Street, Long Island City 1, New York.

How the 100A viewer works

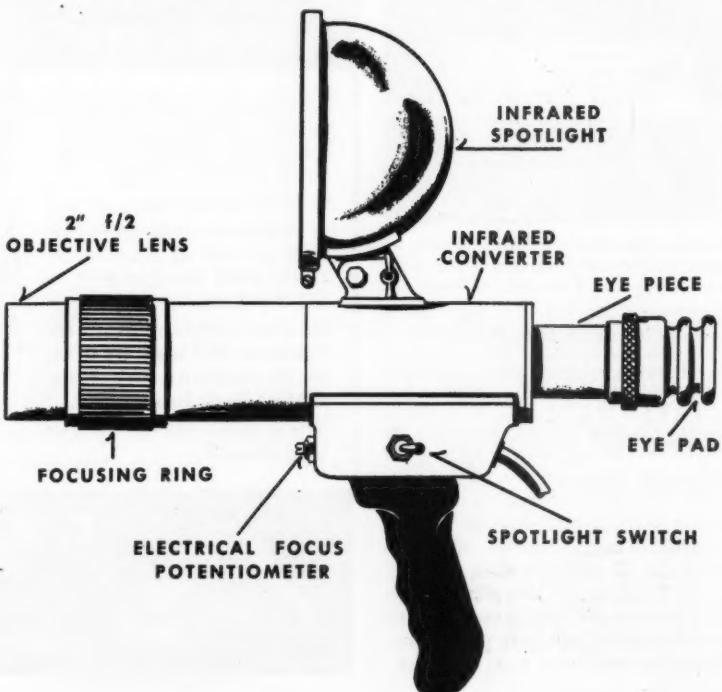
The illustration below is a schematic drawing of the infrared viewer. The "light" source is mounted on top of the instrument to supply a concentrated beam of infrared radiation. This consists of a tungsten lamp in reflector and a filter which transmits only invisible infrared. The viewer can be hand held, or when the handle is detached,

the viewer may be used on a tripod.

The inside story on how the viewer works is as follows: the objective lens focuses the infrared radiation reflected from the subject under observation to the front face of an I. R. Image Converter Tube (Farnsworth 1 C16-3 tube). A special corrector lens is part of this optical system, and its function is to correct for the curved front surface of the converter tube. An infrared sensitive phosphor is coated on a thin support inside the image tube, and electrons are ejected from it in proportion to the amount of infrared striking the surface at any point. The electrons in turn are driven toward the opposite end of the tube by a high voltage potential. The electrical field conditions are such that the electrons are not only accelerated in speed, but are also focused to form a somewhat reduced image on a fluorescent screen. This screen emits greenish-white light which is viewed through a magnifying eye-piece. Thus, the invisible infrared radiation is converted to visible light.

Applications in photography

The quality of the image is satisfactory for numerous applications in photography. A resolution of 400 lines



per inch is readily obtained, which means that fairly small detail, such as typewritten material, can be seen with no difficulty from a distance of 20 or so feet away. The objective lens has a focusing mount so that distant or close-up objects can be viewed. Therefore, the first and obvious use of the device is for observing objects or scenes in the dark which are illuminated by the infrared source. Nature photographers, for example, could use the viewer for animal photography at night without having to depend upon a stationary set-up which operates only when an animal accidentally triggers a flash lamp. Of course, there are limitations to this application because not many deep woods have 115 volt, 60 cycle current outlets on every tree, and extension cords come pretty high when purchased by the mile.

Special purposes

In medical photography the viewer is a natural for special purposes where visible light creates an unwanted situation. In photographing the pupil of the eye, for example, pictures cannot be made of the fully opened pupil if any visible light is present during focusing and arranging of the equipment. With the infrared viewer the subject could be placed in a predetermined position, following complete rest in total darkness to achieve full dark adaptation.

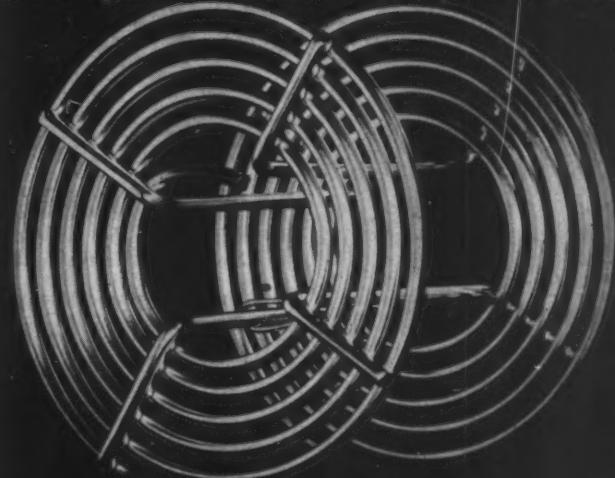
In photographing documents or works of art by infrared in an effort to determine questionable points, a lot of time could be saved by first examining the object with the viewer to see if anything significant becomes evident under infrared illumination. If so, the viewer could be used to direct the source on the object to best advantage.

In the darkroom many uses come to mind. A film jammed in a camera could be straightened out or removed without exposing the emulsion to light. The location of solution bottles during processing would no longer be a hit-and-miss proposition, which sometimes is the case with even the best of us. Objects which are accidentally dropped could be found more readily. It is amazing how clumsy and inefficient one can be when performing a task in complete darkness. (Just recall how awkward people appear when playing blind man's bluff.)

No doubt readers of this column will think of applications for the infrared viewer which have not been suggested here. I am sure that J. A. Maurer, Inc. would like to know of any unique ideas which occur to you, i.e., ideas which you don't care to patent!—THE END



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the Camera Clubs

by MABEL SCACHERI

**It's news. How to project stereo
slides at your club and avoid eye
strain caused by correcting for
horizontal and vertical errors.**

Interest in stereo photography is sweeping the country, I think most camera fans will agree. Of course, as a result, there are quite a number of stereo clubs, perhaps a hundred, throughout the country, and many of the regular print-and-slide camera clubs now have a stereo night once every month.

Now you know as well as I do that you can't step into a new field in photography without running into a few new problems. Not that stereo cameras present any great difficulties of operation. They don't. But the stereo fan does have to wise up on how to mount his stereo pairs accurately for distant shots, for medium views and for closeups. You want to be able to see them right when your eyes are glued to a hand viewer. And the eye accommodates to small differences.

A stereo club, however, has to project the stereo slides on a screen, with the image coming up to some 50 inches wide, so that the club members, happily owl-eyed behind those stereo viewing spectacles, can all see the pictures in full stereo at the same time. Here's where mounting differences play hob. Those small mounting differences are now magnified about 50 times. You don't even see the pictures in stereo. To correct this the projectionist twiddles the two knobs which move the projecting lenses and correct for vertical and horizontal errors. While this is going on, so the guys in the know tell me, the audience experiences more eye strain than they would if the uncorrected image were left on the screen.

Innovation in stereo projection

Now, what am I doing, trying to sell you on projecting stereo slides? Not at all. Help is close at hand, and information on a new projection method which you can use will be available shortly. It all started with the Stereo Club of New York which includes in its membership some very talented engineers. Fans, lure as many engineers as you can into any camera club. They do come in handy in this highly technical age of ours.

I attended a meeting of this club at which these skilled members described a doodad they will soon have perfected.

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It's for projecting stereo slides in any type of mount, without eyestrain from adjusting vertical and horizontal errors. What they have cooked up is an electrically controlled device with two sets of buttons, perhaps 10 buttons per set, on the order of those buttons on an inter-com panel. One set of buttons will apply to vertical errors, the other to horizontal errors, and the buttons will operate the knobs of the projector, automatically.

Before a batch of stereo slides are projected for the club audience, the program committee will preview them. Suppose that they find Slide No. 1 can be rectified in projection by pushing Button No. 6 on the vertical set of buttons, and Button No. 2 on the horizontal set. The projectionist will make a note to that effect and file it in front of the slide. And so on through the entire bunch of slides.

Then, at the club meeting, each slide, before it is projected, will be corrected by pushing the proper buttons, and thus the audience will experience no eye strain, never have to look at an out of stereo projection. Pretty smart, those engineers!

Next you want to know how does your club get in on all this? As soon as detailed information is available we'll let you know in this column. I don't know just what the deal will be, but right now President Jack Ellerstein (a real gone stereo shooter himself) tells me that the how-to-do-it-yourself information will be passed on to any club which is interested. It's possible, too, that some manufacturer will leap on the idea and manufacture this device. But right now watch for further details in this column.

Other considerations in stereo

Of course, the projection problem is not the only special consideration in a program of stereo slides. Composition for stereo is somewhat different than composition for planar photography. Foreground detail looms up in stereo much more emphatically than it would in a planar slide of the same subject matter. Then there's the matter of depth of field. We all need to revise our thinking on this matter, and 3-D composition and technique.

Now that summer is coming on, why don't you round up a bunch of stereo fans and go on a few picture-shooting forays together? Maybe the fellows not operating their 3-D camera at the moment can yell at the others, "Hey there, what do you think you are doing, making a plain ordinary old flat picture? You've got lots of light, you can close down, get a shot in depth, you'll have plenty of leeway." I'd be glad if somebody would yell those words at me when I go "flat" in stereo composition.

That idea of the congenial, informal group seems to me a good way to start any kind of camera club. Pal around together shooting pix in the summertime, and then, come fall, organize yourselves into a club.—THE END

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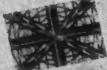
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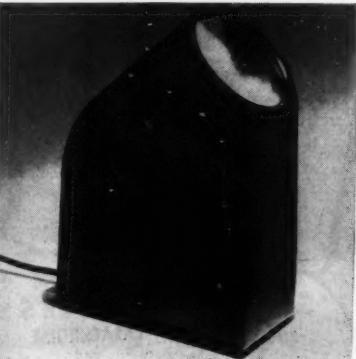
(Continued from page 40)

into a sturdy steel chassis, the unit is in turn enclosed in a top-grain cowhide case. A Koiled Kord cable has been employed as the lamp head cable of the new unit. This cord will stretch to about 12 feet if required for off-camera use, mounting on light stands, etc. Otherwise it retracts to an out-of-the-way position when lamp head is used "on camera." Price of the Strobofar Six, without batteries, \$128.60. Price of batteries, \$7.95 each. For additional information, write:

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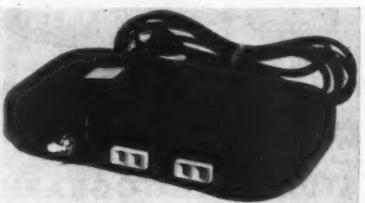


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(Continued on page 126)

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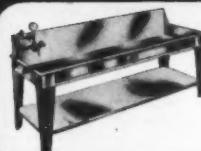
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(Continued from page 125)

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La Belle New 35mm Slide Projector



La Belle's Director 300 projector for 35mm slides has the same "touch system" changer features found on more expensive La Belle models. One movement of a lever feeds, projects, changes and restacks the slides. The new projector holds 150 slides, is blower cooled and comes with an f/3.5 lens. It is designed in bright colors and uses a 300-watt lamp. Price, \$59.50. For additional information, write:

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Clayton Speed Fixer

Excellent hardening properties and greatly extended working life are claimed for the new Clayton CF-9 fixer for films and papers. Containing hardener, the CF-9 fixer is a concentrate which makes up to two gallons of working solution per quart. Price, per quart, \$1.25. For more information, write:

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Automatic Stereo Slide Viewer



Geiss-America's GA-20 is an automatic hand-held stereo viewer for slides of standard format. It holds 20 stereo slides (each in a special mount) and is gravity fed from a magazine. Maximum sharpness is assured by an interocular adjustment and knob-focusing system. The German-made viewer operates on battery or AC. Price, \$25. For more information, write:

GEISS-AMERICA

6424 N. WESTERN AVE., CHICAGO, ILL.

New Tiffen Filters

Tiffen 82A, 82B, 82C and 85C filters (for use with type F Ektachrome) are available in screw-in mounts for the Retina IIA, IIB, IB, IIC and IIIC cameras. T-coated, the filters screw directly into the lens mount, without an adapter ring, and can remain on the lens when the case is closed. Price, per filter, \$4.25.

Also available are: a complete line of bayonet mounted filters for the Vitezza cameras (\$4.25 each), and a complete line of matched filters in pairs for the Kin-Dar stereo camera (\$5.35 per pair). For additional information write:

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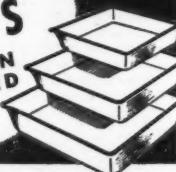
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Designed to give all-weather protection for still and movie equipment, the Halliburton aluminum camera cases are available in three sizes: Model 100 HC, 9 x 12 x 5 in., Model 101 HC, 9 x 16 x 7½ in., Model 103 HC, 13 x 18 x 6 in. They are made of anodized aluminum alloy with all welded construction. Features are: rubber interlocking seal, felt-lined sections with movable dividers, lid compartment. Each Halliburton case has Tenite plastic handles, and the two smaller models are provided with carrying strap clips. Prices are: 100 HC, \$49.50; 101 HC, \$59.50; 103 HC, \$69.50. For additional information, write: HALLIBURTON, INC., LOS ANGELES 58, CALIF.



Zeiss Contaflex II

Similar in general appearance to the Contaflex I, the new Contaflex II features a built-in photoelectric exposure meter with easy-to-read scales on top of the camera body. As in the previous model, the Contaflex II has a 45mm Tessar f/2.8 lens, Synchro Compur shutter with speeds from 1 sec. to 1/500 plus Bulb, eye-level ground-glass or rangefinder viewing. All attachments and accessories for the Contaflex I are interchangeable with the new model. Made in Western Germany. Price of the Contaflex II is \$199. An everready



case is available at \$14. For additional information, write: CARL ZEISS, INC., 485 FIFTH AVE., NEW YORK 17, N.Y.

Brockway M-3 Norwood Director

The new M-3 photo-electric cell exposure meter is specifically designed to measure incident light, and features direct reading. In use a slide for film speed and shutter speed is inserted into the meter. The M-3 is then held with its Photosphere pointing at camera position, and the f/stop is read directly on the meter. Slides are available for all popular film and shutter speed combinations. And the scale on the meter is also calibrated for Polaroid camera settings.

Extremely compact and weighing less than two ounces, the M-3 can be clipped on the pocket like a pencil. Price, \$16.95. For more information and an illustrated folder describing the M-3 and the incident light method of exposure determination write:

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Walz Custom Filters

The following Walz filters are available for color films: Type A conversion, Skylight, and flash correction. Red, yellow and green filters are available for black-and-white films. Made in Japan, the new line of filters is designed for

(Continued on page 128)



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(Continued from page 127)

various still and movie cameras including: Argus C3, Kodak Signet and Bantam, Retina, Karomat, Contaflex, Contessa, Leica, Rollei, Exakta, Contax, Praktiflex, f/2.7 Brownie movie camera, Bell & Howell 220 and 252, and 8mm Revere and Keystone movie cameras. Mounted on threaded or bayonet mounts, the filters may be left on the camera when body or case is closed. The filters are also threaded in order to accept screw-in type lens hoods. Prices are from \$1.95 to \$6.95. For additional information, write:

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A new Koiled Kord fitting Argus C3 cameras permits use of flash "off the camera." The cords measure 3 feet when extended and are available with a household-type plug to fit Heiland and similar battery cases, as well as with a prong-type plug for Kalart guns. Price, \$1.98. For more information, write: *Spiratone, Inc.*, 49 West 27th St., New York, N.Y.

Heiland Fotoeye Model HR-53



similar to the Heiland 25-2 Synchronette, size "D," battery case, and accepts Strobonar lamp heads on top. There is tripod socket on the bottom. Price of Model HR-53 Fotoeye, \$24.50. For additional information, write:

HEILAND DIVISION
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New Cine-Kodak Movie Camera

The new 16mm roll-film camera—the Cine-Kodak K-100—is the latest in the series which began in 1930 when Eastman introduced the Cine-Kodak Model K. The new camera features a pre-stressed spring power motor that exposes up to 40 feet of film at a single winding, a shutter release at the rear of the camera, a telescopic viewfinder which shows a life-size image, and a large, accurate speed-control governor. It is available with either the Ektar 25mm, f/1.9 or the Ektar 25mm, f/1.4 lenses. In either case the camera will use any of a full complement of auxiliary Kodak Cine Ektar lenses in focal lengths from 15mm (wide angle) to 152mm (six times magnifying telephoto lens).

The new camera loads with 50 or 100 foot rolls of all standard Kodak movie films, either single (for optical or magnetic sound) or double perforated. Other features are: a spring motor dial to show at any time exactly how many feet of film can be run without rewinding, operation at five speeds from 16 to 64 frames per second, an auxiliary hand crank to backwind in producing multiple exposures and other special cinematic effects. The camera may also be

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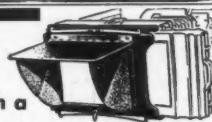
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EASTMAN KODAK CO.
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ROCHESTER 4, N. Y.

Two New Contina (35mm) Models



Two new Zeiss cameras—the Contina Ia and IIa—feature a rapid film-winding and shutter-cocking lever which permits rapid sequence picture-taking by flipping over the film advance lever. The Ia and IIa, from Western Germany, can be distinguished from the older model Contina lenses by their absence of bellows—the lenses of the Ia and IIa are mounted on the camera housing. Both models have a Prontor SVS fully-synchronized shutter with speeds from 1 sec. to 1/300 plus Bulb, and self-timer.

Special feature of the Contina IIa (shown) is a built-in photoelectric exposure meter. The IIa is available with either a 45mm Novar f/3.5 lens, or a 45mm Novicar f/2.8 lens. Price, with the Novar lens, \$75; with the Novicar, \$86.

The Contina Ia is supplied with a 45mm Novar f/3.5 lens. Price, \$54.

An eveready carrying case for both models is priced at \$9. For additional information, write:

CARL ZEISS, INC.

485 FIFTH AVE., NEW YORK 17, N. Y.

High speed Kodak Tri-X is now available in 20-exposure 35mm cartridges as well as 36-exposure cartridges and 120-620 rolls. Designated TX135-20, the 20-exposure cartridge is priced at 85 cents. For more information, write: Eastman Kodak Co., Rochester 4, N. Y.

The new Portable Powerhouse is an electrical control box with heavy duty wiring, which will accept three complete light sets. All lights are controlled by one centralized switch. A neon signal light indicates the Powerhouse is on, and is particularly useful when appliances are plugged into the aluminum control box. Price, \$4.95. For more information, write: D. Bruley Co., 872 Broadway, New York 3, New York.

AnSCO Plenachrome All-Weather film is now reduced in price by six cents per

roll. Three-roll Economy Paks are reduced by 21 cents per pack. New prices are: 127, 34 cents; 120 and 620, 39 cents; 616 and 116, 49 cents. Economy Paks in 127 are 84 cents; 120 and 620, 99 cents. For more information, write: AnSCO, Binghamton, N. Y.

The V-2 plastic hand viewer for 2 x 2 slides features a two-element lens and is designed for slide viewing by available light. Springs inside the viewer enable slides of any thickness to remain firmly in position while being viewed. The V-2 is finished in two-tone green and is priced at \$3.50. For additional information, write: Craftsmen's Guild, 1001 N. Orange Drive, Hollywood 38, California.

Kodak Ektacolor film has now been made available in a wide range of popular roll film sizes. The film is offered in both Daylight Type and Type A, but prices do not include processing by the manufacturer. Prices, per roll: 127, 90 cents; 120, \$1.10; 620, \$1.10; 116, \$1.50; 616, \$1.50; 828, 80 cents. For additional information, write: Eastman Kodak Co., Rochester 4, N. Y.

New Spiratone filters for use with Ektachrome are mounted in metal rings and engraved as to designation. The #82E, #82C and #85C filters are priced at Series V, \$1.39 each; Series VI, \$1.59 each; Series VII, \$2.98 each. For more information, write: Spiratone, Inc., 49 W. 27th St., New York 1, N. Y.

The Kalimar Prismatic Rangefinder which replaces the regular prism viewer in the Exakta camera features split-image focusing. Focusing takes place in the middle of the non-frosted circle in the field lens and is readily accomplished even when the lens has been closed down. Made in Western Germany; price, \$75. For more information, write: Arel Inc., 4916 Shaw Ave., St. Louis 10, Mo.

Close-up work with the Alpa 35mm camera can now be done by use of the Varextan, a new bellows attachment. It has a milled rail about ten inches long which carries two sliders. One of these is advanced or slid back by hand, while the other has a rack-and-pinion mechanism for fine adjustment. The connecting leather bellows is equipped with two removable boards, each with a bayonet mount. The front board accepts all Alpa lenses, while the rear board fits into the camera. The Varextan is priced, complete, at \$79.50. For more information, write: Karl Heitz, Inc., 150 W. 54 St., New York, N. Y.

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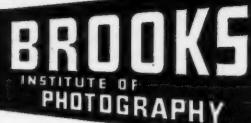
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CARE URGED IN USING EDWAL FILM CLEANER

Users of Edwal Anti-Static Color Film Cleaner are warned in recent announcement from Edwal Scientific Products Corp. to strictly follow directions, which call for hand application with a moistened cloth.

On the market since October, 1954, this Edwal Color Film Cleaner (identified by its red label and the words "anti-static") contains a new solvent which is 10 times less toxic than the old style carbon tetrachloride formulations and has a more powerful cleaning action. However, it should be allowed to evaporate completely from movie film, before re-winding into the reel. It should not be used with film-cleaning machines or cleaning procedures which saturate the film with cleaner and then wind it onto the reel without allowing the cleaner to evaporate. Such treatment may cause the film to buckle.

Edwal has recalled all stocks of this cleaner from dealers and has replaced it with a non-curling Edwal Color Film Cleaner, on the market since March 1. This has a number "2" stamped on the back label and is not only anti-static and non-curling but also contains a newly marketed solvent that is 20 times less toxic than carbon tetrachloride. While the earlier solution should not be used on lacquered film, this new cleaner can be applied to lacquered film.

Replacement of Edwal Color Film Cleaner (red label) which has the words "anti-static" on the front label and does not have the number "2" on the back may be obtained by soaking off the front label and sending it to Edwal Scientific Products Corp., 420 West 11th St., Chicago 28, Illinois.

PICTURE CREDITS

The photographers who helped us assemble pictures for the exposure chart on pages 74 and 75 are as follows:

Dark subjects, left to right: Joyce Wilson, Burt Owen, Burt Owen, W. Carl Naylor, Leo Johnson.

Average subjects, left to right: Earl Leaf, Serge De Sazo, Braun, Carmelo Montijo, Ernst Weber.

Light subjects, left to right: William Jerig, Burt Owen, Mark Slade, Burt Owen, Rodger La Pelle.—THE EDITORS



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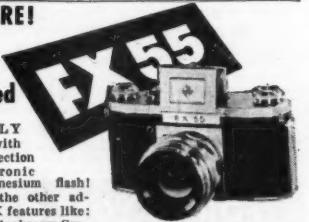
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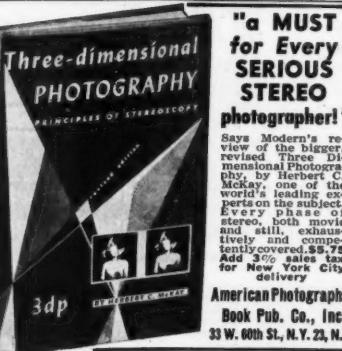
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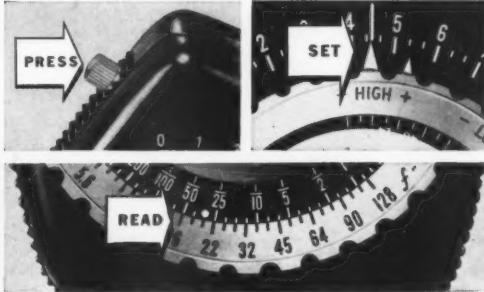


EXCLUSIVE FEATURES OF THE G-E PR-1 EXPOSURE METER HELP YOU COMBINE WARM FLESH TONES AND SPARKLING COLORS QUICKLY AND EASILY

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Kodak Signet 35 Camera (right). Kodak's finest miniature-camera lens—the Kodak Ektar Lens, f/3.5 *Lumenized*. Accurate coupled rangefinder combined with viewfinder. Kodak Synchro 300 Shutter with speeds from 1/25 to 1/300 second, plus "B." Ball-bearing lens mount; double-exposure prevention; automatic film stop; automatic film count. Price, \$75.

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